

Catalog 696116 of Publications

U. S. NAVAL OCEANOGRAPHIC OFFICE



H.O. PUB. 1-P

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FOREWORD

The U. S. Naval Oceanographic Office prints many scientific, hydrographic and oceanographic publications. This catalog was compiled so that references to these publications can be readily made by those who are interested in these fields of endeavor.



T. K. TREADWELL
Captain, U. S. Navy
Commander

H. O. PUB 1-P ERRATA

The following publications are not for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

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6	H. O. Pub 595
9	H. O. Pub 110
19	H. O. Pub 240
20	H. O. Pub 103, 104, 111A, 111B
21	H. O. Pub 112 - 116
24	H. O. Pub 226, SP-66
25	SP-66, Supplement I
28	H. O. Pub 119
30	H. O. Pub 9, Part III
31	H. O. Pub 220
32	H. O. Pub 261, 606A
38	H. O. Pub 238
41	H. O. Pub 117A, 117B, 118A, 118B
42 - 47	H. O. Pub 10 - 98, Sailing Directions
52	H. O. Pub 605

Make pen and ink changes for the following items.

<u>Page</u>	<u>Publication</u>
34	H. O. Pub 607 - Instruction Manual for <u>Obtaining Oceanographic Data, 1968, 190 p., \$1.25</u>
43	H. O. Pub 32 - West Coasts of England and Wales, <u>1967</u>
44	H. O. Pub 43 - The Baltic, Volume II, <u>1967</u>
47	H. O. Pub 96 - Japan, Volume I, <u>1967</u>
49	H. O. Pub 215 - Temporarily out of print

PREFACE

This catalog is a listing of publications which are for sale by the Naval Oceanographic Office. It includes HO, SP, and TR publications listed by subject matter with a description for each publication.

Any suggestion for the improvement of the format of this catalog should be directed to the following address:

Commander
Naval Oceanographic Office
Attn: Code 4300
Washington, D. C. 20390

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ASWEPS

PUB NO	TITLE/NOMENCLATURE
SP 103 VOL 3	* ASWEPS MANUAL SERIES - DECODING AND PLOTTING, by J. Tapager, 1966, 42 pp., \$.35 - This manual discusses procedures used in the first stage of the data reduction process after oceanographic observations have been transmitted from the collection points.
SP 105 VOL 5	* ASWEPS MANUAL SERIES - OCEAN THERMAL STRUCTURE FORECASTING, by R. W. James, 1966, 217 pp., \$1.50 - This manual describes procedures for manually predicting the thermal structure of the ocean with emphasis on forecasting for a small area over a limited time period.
SP 109 VOL 9	* ASWEPS MANUAL SERIES - NUMERICAL TECHNIQUES, by B. J. Thompson, 1965, 26 pp., \$.25 - This manual explains that automation of ASWEPS is a logical step for the entire program from data sampling to radio facsimile or message outputs.
SP 111	DATA REQUIREMENTS FOR SYNOPTIC SEA SURFACE TEMPERATURE ANALYSES, by R. W. James, 1967, 29 pp., \$.60 The primary objective of this report is to establish guidelines for the quantity and quality of synoptic observations required to ensure reliable sea surface temperature analyses. Although the study was conducted in the western North Atlantic with ASWEPS in mind, the conclusions are valid for other ocean areas having similar thermal characteristics.
TR 94	ASWEPS REPORT NO 3 - TONGUE OF THE OCEAN RESEARCH EXPERIMENT, by A. W. Magnitzky and H. V. French, 1960, 132 pp., \$1.10 - Oceanographic cruise was made aboard USS SAN PABLO from 4 to 20 March 1960. A short discussion of the data is given together with illustrations.
TR 104	ASWEPS REPORT NO 5 - PREDICTION OF THE THERMOCLINE DEPTH, by P. A. Mazeika, 1960, 80 pp., \$1.05 - A method of predicting the thermocline depth has been devised using BT data and weather conditions at ocean weather station CHARLIE.
TR 107	ASWEPS REPORT NO 1 - THE OCCURRENCE AND VELOCITY DISTRIBUTION OF SHORT-TERM INTERNAL TEMPERATURE VARIATIONS NEAR TEXAS TOWER NO 4, by R. D. Gaul, 1961, 45 pp., \$.50 - This report describes a study of the occurrence, speed, and direction of short-term changes in water temperature structure near Texas Tower No 4 off New York.

ASWEPS

PUB NO	TITLE/NOMENCLATURE
TR 131	ASWEPS REPORT NO 6 - OCEAN CURRENTS OVER PLANTAGENET BANK, BERMUDA, by R. A. Pedrick, 1962, 73 pp., \$.95 This report presents results of a study of ocean currents over Plantagenet Bank, Bermuda from 1 to 15 August 1961.
TR 132	ASWEPS REPORT NO 9 - DIURNAL TEMPERATURE CHANGES AT OCEAN STATION ECHO - 1959, by E. L. Corton, 1962, 21 pp., \$.30 - This report describes the analysis of diurnal temperature changes deduced from a series of 900 half-hourly BT's obtained at OWS ECHO (35N 48W) in September 1959.
TR 147	ASWEPS REPORT NO 10 - PREDICTION OF THE 400-FOOT TEMPERATURE IN THE NORTH ATLANTIC, by P. A. Mazeika, 1965, 73 pp., \$1.00 - By use of temperature anomaly values at 400 feet, as related to mean surface temperature anomalies, the temperature at 400 feet can be predicted several days in advance with an approximation of 1.1°F.
TR 180	ASWEPS REPORT NO 11 - QUANTITATIVE ANALYSIS OF SOME BATHYTHERMOGRAPH ERRORS, by J. B. Hazelworth, 1966, 27 pp., \$.60 - A statistical study of errors associated with the bathythermograph made from data collected at ocean weather stations DELTA and ECHO.
TR 194	ASWEPS REPORT NO 12 - HEAT ABSORPTION AND HEAT BUDGET AT OCEAN STATION ECHO - SEPTEMBER 1959, by E. L. Corton, 1967, 29 pp., \$.70 - Bathythermograph data are used to calculate horizontal and vertical heat exchange in the ocean surface layer to a depth of 100 feet for clear, partly cloudy, and cloudy skies during daylight hours. The temperature of the water column is changed about 0.1°F by the heat exchange.
TR 197	ASWEPS REPORT NO 13 - AN EXAMINATION OF SYNOPTIC OCEANOGRAPHIC DATA, by G. H. Jung, 1967, 21 pp., \$.60 - A repeated grid of stations in the North Atlantic in July 1963 was analyzed to determine horizontal conductivity effects on thermal structure. Results show that eddy conductivity could have caused all vertical temperature and salinity changes that occurred.
TR 208	ASWEPS REPORT NO 14 - ASWEPS SHALLOW WATER INVESTIGATION, VIRGINIA CAPES AREA, FEBRUARY - MARCH 1967, by A. Fisher, Jr., 1968, 19 pp., \$.60 - The thermal structure of an oceanic area over the Continental Shelf seaward of the Virginia Capes was investigated during late

ASWEPS

PUB NO	TITLE/NOMENCLATURE
TR 202	winter 1967. Results show that the thermal structure can be predicted if sufficient synoptic data are available.

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BATHY THERMOGRAPH

PUB NO	TITLE/NOMENCLATURE
HOP 606C	HYDROGRAPHIC OFFICE OBSERVERS MANUAL - BATHY THERMOGRAPH OBSERVATIONS, 1963, 13 pp., \$.15 - This publication describes the operational procedures and nomenclature of a bathythermograph.
NODC C-2	INVENTORY OF BT DATA - WORLDWIDE - ALL OCEANS AND SEASONS, 1964, 27 pp., \$.40 - This publication contains a compilation of annual and seasonal charts by oceans, showing the distribution of bathythermograph (BT) observations available in NODC.
NODC G-6	ATLAS OF BATHY THERMOGRAPH DATA - INDIAN OCEAN, 1966, 129 pp., \$5.00 - This publication contains digitized bathythermograph data (about 10,000 observations) compiled as composite plots by an automated data plotter on a seasonal basis.
NODC M-3 PART 1	MANUAL FOR PROCESSING BATHY THERMOGRAPH DATA - INSTRUCTIONS FOR MANUALLY DIGITIZING BATHY THERMOGRAPH DATA, 1964, 33 pp., \$.50 - This publication describes the method and format used by NODC for systematic reduction of nearly 1,000,000 BT analog observations in its archives to a digital format that can be accepted by modern computers.
NODC M-3 PART 2	MANUAL FOR PROCESSING BATHY THERMOGRAPH DATA - PROCEDURES FOR PROCESSING BATHY THERMOGRAPH DATA IN ANALOG FORM, 1964, 31 pp., \$.50 - This manual acquaints users of BT data and field activities with the quality criteria and revised basic processing methods which are currently used at NODC for the production of analog BT prints.
TR 26	POWER SPECTRUM ANALYSIS OF INTERNAL WAVES FROM OPERATION STANDSTILL, 1955, 20 pp., \$.25 - Selected temperature readings of half-hourly bathythermograph observations taken on OPERATION STANDSTILL were analyzed by power spectrum methods.

BOTTOM PRESSURE

PUB NO	TITLE/NOMENCLATURE
TR 14	PRELIMINARY INVESTIGATIONS ON PREDICTING PROPERTIES OF BOTTOM PRESSURE FLUCTUATIONS, by R. C. Timme and F. A. Stinson, 1955, 31 pp., \$.35 - Characteristic properties of background pressures are obtained using empirical results and statistical methods for computing energy or power spectra. Comparisons between predicted and observed properties are given.

BOTTOM SEDIMENTS

PUB NO	TITLE/NOMENCLATURE
SP 32	A SELECTIVE BIBLIOGRAPHY OF ENVIRONMENTAL CONTROLS ON OBJECT STABILITY ON THE SEA BOTTOM, by J. K. Duncan, 1950, 117 pp., \$1.00 - This bibliography represents the results of a survey of the scientific literature in the fields of marine geology, sedimentation, oceanography, and hydrology.
TR 63	INVESTIGATIONS OF DEEP-SEA SEDIMENT CORES - I. SHEAR STRENGTH, BEARING CAPACITY, AND CONSOLIDATION, by A. F. Richards, 1961, 70 pp., \$.70 - The first of three reports describing results of an investigation of engineering and mass physical properties of 35 sediment cores collected in 1958 and 1959.
TR 106	INVESTIGATIONS OF DEEP-SEA SEDIMENT CORES - II. MASS PHYSICAL PROPERTIES, by A. F. Richards, 1962, 146 pp., \$1.20 - The second of three reports describing results of an investigation of mass physical properties of 35 sediment cores collected in 1958 and 1959.
TR 150	SUBMARINE SEDIMENT DATA COLLECTION AND MANAGEMENT AT THE U. S. NAVAL OCEANOGRAPHIC OFFICE, by J. K. Duncan, 1964, 88 pp., \$.75 - This report describes the methods of securing, processing, and storing submarine sediment data at the U. S. Naval Oceanographic Office. Data sources are listed and world-wide distribution by one-degree quadrangles is shown.
TR 173	BOTTOM AND SUBBOTTOM INVESTIGATION OF PENOBSCOT BAY, MAINE (1959), by C. Ostericher, Jr., 1965, 177 pp., \$2.65 - This report contains bottom sediment results and sonoprobe records obtained during 1959 in Penobscot Bay, Maine inshore survey.

BOTTOM SEDIMENTS

PUB NO	TITLE/NOMENCLATURE
TR 186	SEDIMENTS OF THE NORTHERN ARABIAN SEA, by R. A. Stewart and O. H. Pilkey, 1966, 28 pp., \$1.00 - This publication presents the regional setting and the marine environment of the area. Field and laboratory sediment analyses procedures are explained.
TR 187	SEDIMENTS AND REEF CORALS OF CAYO ARENAS, CAMPECHE BANK, YUCATAN, MEXICO, by R. F. Busby, 1966, 58 pp., \$1.20 - Morphology and sediments of the Island are discussed and sediment parameters (grain size, sorting, and constituents) of samples taken on and adjacent to the reef are presented.

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CARTOGRAPHY

PUB NO	TITLE/NOMENCLATURE
HOP 9 PART 8	HYDROGRAPHY - AMERICAN PRACTICAL NAVIGATOR, 1958, 63 pp., \$.60 - This part explains hydrography from the instruments used in surveying to the actual construction of nautical charts. It also explains oceanic soundings and photogrammetry.
HOP 592	MANUAL OF COASTAL DELINEATION FROM AERIAL PHOTOGRAPHS, 1947, 143 pp., \$1.50 - This publication aids the photogrammetric engineer in the delineation of coastal areas from aerial photographs.
HOP 595	CARTOGRAPHIC AERIAL PHOTOGRAPHY, 1964, 72 pp., \$.25 - This publication provides instructions for inspection and evaluation of aerial photography to determine its suitability for cartographic purposes.
HOP 10649	PROJECTS IN DRAFTING FOR TRAINEES, 1943, 99 pp., \$2.00 This publication outlines the basic essentials of mechanical and free-hand drafting. While related to chart drafting in some particulars, it serves as an introduction to the use of instruments in any government department training beginners for the less involved drafting assignments.
HOP 17503	METRIC CONVERSION TABLES, 61 pp., \$1.00 - This publication provides metric conversion tables from 0 thru 21.9 meters shown at 0.1 meter intervals and from 22 thru

CARTOGRAPHY

PUB NO	TITLE/NOMENCLATURE
HOP 17503	7000 meters at 1 meter intervals with equivalent values given in feet and also in fathoms.
SP 40	TABLE OF GEOGRAPHIC COORDINATES FOR 10,000 METER UTM GRID INTERSECTIONS, 1960, 313 pp., \$2.50 - This table is based on the International Spheroid and designed to facilitate positioning the Universal Transverse Mercator (UTM) Grid on Nautical Charts.
TR 10	THE ACCURACY OF REPRODUCED MAP COMPILATION GRIDS, by F. W. Howlett, 1959, 34 pp., \$.35 - Reproduced grids as compared to drafted grids for map and chart compilation were investigated.
TR 120	OPERATIONAL TEST OF 70 MM FORMAT HIGH ALTITUDE PHOTOGRAPHY FOR MAPPING, by R. F. Gettys, 1962, 31 pp., \$.40 The results of limited operational tests to determine the potential of high altitude 70 mm format aerial photography for mapping.

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CATALOGS

PUB NO	TITLE/NOMENCLATURE
---	CATALOGUE OF DATA IN WORLD DATA CENTER-A - OCEANOGRAPHY, 1964, 352 pp., (no charge, furnished on request) - This catalog contains descriptions of all oceanographic data received by WDC-A, Oceanography, during the period 1 July 1957 through 31 December 1963.
---	CATALOGUE OF DATA IN WORLD DATA CENTER-A - OCEANOGRAPHY, SUPPLEMENT I, 1964, 93 pp., (no charge, furnished on request) - This catalog contains descriptions of all oceanographic data received by WDC-A, Oceanography, during the period 1 January through 30 June 1964.
---	CATALOGUE OF DATA IN WORLD DATA CENTER-A - OCEANOGRAPHY, SUPPLEMENT II, 1965, 83 pp., (no charge, furnished on request) - This catalog contains descriptions of all oceanographic data received by WDC-A, Oceanography during the period 1 July through 31 December 1964.
---	CATALOGUE OF PUBLICATIONS IN WORLD DATA CENTER-A - OCEANOGRAPHY, 1965, 135 pp., (no charge, furnished on request) - This catalog contains titles and originating institutions

CATALOGS

PUB NO	TITLE/NOMENCLATURE
---	of publications, reports, and reprints received by WDC-A, Oceanography during the period 1 July 1957 through 31 December 1964.
HOP 1-IR	CATALOG OF INFORMAL REPORTS, 1968, 104 pp. - This publication is a listing of current informal reports. These reports are used to disseminate information on subjects which do not have sufficient interest to warrant wide distribution as formal publications.
<p>CATALOG OF NAUTICAL CHARTS AND PUBLICATIONS - This publication provides information of interest to the navigator on nautical charts and related publications available for sale to the general public, or on issue for official use. It is divided into the following 13 principal sections:</p>	
HOP 1-N	
INTRO PART I	INTRODUCTION PART I, (no charge, furnished on request) - Consists of general catalog instructions, index plates showing small scale general sailing charts of the oceans, and publications lists with graphic index.
INTRO PART II	INTRODUCTION PART II, \$.25 - Index plates showing limits of Loran Charts, Plotting Charts, Bottom Contour Charts, Great Circle and Polar Charts, and Wall Charts.
INTRO PART III	INTRODUCTION PART III, (no charge, furnished on request) - Numerical list of nautical charts and publications.
REGION 0	UNITED STATES, \$.25
REGION 1	CANADA, GREENLAND, AND ICELAND, \$.25
REGION 2	CENTRAL AND SOUTH AMERICA, ANTARCTICA, \$.25
REGION 3	WESTERN EUROPE, \$.25
REGION 4	SCANDINAVIA, BALTIC, AND USSR, \$.25
REGION 5	WEST AFRICA AND THE MEDITERRANEAN, \$.25
REGION 6	INDIAN OCEAN, \$.25
REGION 7	AUSTRALIA AND INDONESIA, \$.25
REGION 8	OCEANIA, \$.25
REGION 9	EAST ASIA, \$.25
HOP 1-TR	* CATALOG OF OCEANOGRAPHIC OFFICE TECHNICAL REPORTS AND SPECIAL PUBLICATIONS, 1967, 30 pp., \$.30 - This publication contains a list of technical reports and special publications for sale by the Naval Oceanographic Office.

CODING AND KEYPUNCHING

PUB NO	TITLE/NOMENCLATURE
NODC M-2 PART 1	PROCESSING PHYSICAL AND CHEMICAL DATA FROM OCEANOGRAPHIC STATIONS - CODING AND KEYPUNCHING, 1964, 115 pp., \$1.00 - This publication describes the methods used at the National Oceanographic Data Center (NODC) for coding and punching physical, chemical, and meteorological data collected at oceanographic stations.
NODC M-2 PART 1A	PROCESSING PHYSICAL AND CHEMICAL DATA FROM OCEANOGRAPHIC STATIONS - CODING AND KEYPUNCHING ELECTRONICALLY OBTAINED SERIAL DATA, 1966, 11 pp., \$.60 - This publication supplements Part 1 and describes the provisional procedures developed by NODC for coding and cardpunching station data obtained with continuous measuring devices.
NODC M-4	MANUAL FOR CODING AND KEYPUNCHING BIOLOGICAL DATA, 1965, 115 pp., \$1.25 - This manual provides the necessary instructions and conversion tables for reducing biological and related data to the standard format developed by the National Oceanographic Data Center.
NODC M-5	INSTRUCTIONS FOR CODING AND KEYPUNCHING THE GEOLOGICAL SAMPLE INFORMATION FORM FOR CORE, GRAB, AND DREDGE SAMPLES, 1966, 39 pp., \$.50 - This manual provides instructions, codes, and tables for encoding the NODC Geological Sample Information Form, punching the geological decks, and interpreting machine listings of geological data and information.
NODC M-6 PART 1	INSTRUCTIONS FOR CODING AND KEYPUNCHING DRIFT BOTTLE DATA, 1964, 17 pp., \$.40 - This publication provides instructions for reporting reduced release and release-recovery drift bottle data either on the NODC coding form or punch card.

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DANGER AREAS

PUB NO	TITLE/NOMENCLATURE
HOF 110	DANGER AREAS - PACIFIC, 1967, 61 pp., (no charge, furnished on request to those showing a need for it) - DAPAC is designed to present in a single publication all known

DANGER AREAS

PUB NO	TITLE/NOMENCLATURE
HOP 110	danger areas and other war-created hazards in the Pacific, together with information on swept channels and anchorages.
SP 120	CHASE VI SEARCH OPERATIONS, by F. M. Daugherty, Jr., J. A. Chessman, and J. C. Carroll, 1968, 52 pp., \$.70 This publication describes how a Reserve Fleet Liberty Ship EX-ROBERT L. STEVENSON, loaded with 2,000 tons of obsolete explosives, was successfully located in deep water after she was scuttled intentionally south of the Aleutian Islands and failed to detonate as planned.

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DATA PROCESSING

PUB NO	TITLE/NOMENCLATURE
SP 64	A STATISTICAL ROSE PROGRAM, by W. E. Yergen, 1962, 21 pp., \$.25 - This publication describes and evaluates a computer program useful for the statistical processing of bivariate data fields.
TR 88	SUBMARINE OCEANOGRAPHIC DIGITAL DATA SYSTEM, 1961, 26 pp., \$.35 - This report describes a system for sensing, processing, and recording sound velocity, sea water temperature, wave heights, ambient light, date, time, transducer depth, and certain ship motions.
TR 121	INSTRUMENTATION AND PROCEDURES FOR DIGITAL TO ANALOG CONVERSION OF SONIC SURFACE SCANNER DATA FOR INPUT TO AN ANALOG WAVE ANALYZER, by F. S. DeLeonibus and A. Fleischaker, 1962, 27 pp., \$.40 - This report contains the electronic devices and procedures required to convert discrete ocean surface wave height data into a form suitable for input to a wave analyzer.

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EQUILANT

PUB NO	TITLE/NOMENCLATURE
NODC G-3 VOL 1	EQUILANT I - DATA REPORT - INTERNATIONAL COOPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC, 1964, 285 pp., \$5.00 - This volume contains oceanographic, meteorological, and biological data.

EQUALANT

PUB NO	TITLE/NOMENCLATURE
NODC G-3 VJL 1	logical, biological, and other data collected during EQUALANT I of the International Cooperative Investi- gations of the Tropical Atlantic.
NODC G-3 VOL 2	EQUALANT I - DATA REPORT - INTERNATIONAL COOPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC, 1964, 790 pp., \$5.00 - This volume contains the oceanographic station data and associated digitized BT data collected during EQUALANT I which were machine processed by NODC.
NODC G-5	EQUALANT II - DATA REPORT - INTERNATIONAL COOPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC, 1964, 753 pp., \$5.00 - This publication contains oceanographic, mete- orological, biological and other data collected during EQUALANT II of the International Cooperative Investi- gations of the Tropical Atlantic.
NODC G-7	EQUALANT III - INTERNATIONAL COOPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC, 1965, 458 pp., \$5.00 - This publication contains oceanographic, meteorological, and other data collected during EQUALANT III of the Inter- national Cooperative Investigations of the Tropical At- lantic.

FLIGHT INFORMATION (TERMINAL SEAPLANE)

PUB NO	TITLE/NOMENCLATURE
The following publications contain approach, landing, and other ter- minal area data required for seaplane operations. Each volume covers a designated geographic area.	
---	FLIP-TERMINAL (SEAPLANE) NORTH PACIFIC - ALASKA AREA, \$5.00
---	FLIP-TERMINAL (SEAPLANE) WEST ATLANTIC - CARIBBEAN AREA, \$5.00

FLUSHING AND DISPERSION

- | PUB NO | TITLE/NOMENCLATURE |
|--------|--|
| SP 33 | AN ANNOTATED BIBLIOGRAPHY OF FLUSHING AND DISPERSION IN TIDAL WATERS, by L. J. Fisher, 1960, 34 pp., \$.70
This bibliography represents a survey of the scientific literature in the fields of hydraulics, hydrology, and oceanography. The references are annotated for their application to flushing and dispersion in tidal waters. |
| TR 62 | A METHOD FOR ESTIMATING THE FLUSHING TIME OF ESTUARIES AND EMBAYMENTS, by B. W. Gibson, 1959, 19 pp., \$.30 -
A relationship is derived from the circulation pattern of a piedmont-type estuary which expresses the time required for a contaminated estuarine volume containing dissolved or suspended matter to be replaced by tidal action and river flow. |

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GLOSSARY

- | PUB NO | TITLE/NOMENCLATURE |
|---------|--|
| HOF 609 | A FUNCTIONAL GLOSSARY OF ICE TERMINOLOGY, 1952, 88 pp., \$.80 - The purpose of this glossary is to standardize ice terminology and its usage to provide a convenient means by which ice may be classified and described, and to develop a better understanding of ice properties in general. |
| SP 35 | * GLOSSARY OF OCEANOGRAPHIC TERMS, 1966, 204 pp., \$2.25
This glossary provides definitions of technical terms used in oceanography and allied marine sciences. |
| SP 56 | THE QUALITY OF THE BOTTOM - A GLOSSARY OF TERMS, by W. H. Berninghausen, 1961, 11 pp., \$.20 - This report defines bottom sediment notations that appear on both U. S. and foreign navigation charts. It also indicates how bottom sediment notations are reconciled to U. S. Hydrographic Office sediment classification. |

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GRAVITY

PUB NO	TITLE/NOMENCLATURE
HOP 16436	TABLES FOR REDUCTION OF OBSERVED GRAVITY VALUES FROM SUBMARINE GRAVITY SURVEYS, 1956, 73 pp., \$.80 - Observations of gravity at sea must be reduced to a common datum just as are observations on land. Sea level datum gives an ellipsoid of reference common to most methods of surveying in practical usage by the cartographer as well as the submariner. This publication consists of precomputed tables for easy calculations.
TR 115	DEFLECTION OF THE VERTICAL COMPUTATION BY ELECTRONIC COMPUTER, by A. C. Campbell, 1962, 15 pp., \$.30 - A computational procedure for the gravimetric determination of the deflection of the vertical using the square development exclusively.
TR 134	SOURCE OF GRAVITY DATA AT THE U. S. NAVAL OCEANOGRAPHIC OFFICE, by J. E. Lectka and R. K. Lattimore, 1963, 53 pp., \$.50 - Bibliographic citations and brief topical abstracts are provided for documents of land and sea gravity data at the U. S. Naval Oceanographic Office.
TR 169	GRAVITY MEASUREMENTS OVER THE EUROPEAN CALIBRATION LINE WITH LA COSTE AND ROMBERG GRAVITY METERS G-2, g-5, AND g-15, by S. C. Ernberg and D. F. Hollensbe, 1964, 28 pp., \$.70 - This publication presents detailed gravity measurements made over the European calibration line during the summer of 1963.

GULF STREAM

PUB NO	TITLE/NOMENCLATURE
HOP 16782GS	THE GULF STREAM (Published Monthly), \$.10 (per copy), \$1.20 (annual subscription) - This summary presents the Gulf Stream north wall position, associated mean sea surface temperature patterns, and the anomaly from the long-term normal temperatures for the western North Atlantic.

HARBORS

PUB NO	TITLE/NOMENCLATURE
TR 8	HARBOR FREEZEUP REPORT (1957), 1959, 91 pp., \$1.10 The formation and growth of sea ice at Point Barrow, Thule, Cape Hooper, Goose Bay, and Sondre Stromfjord in autumn 1957 are described. Also the major environmental factors are listed.
TR 55	DESCRIPTIVE OCEANOGRAPHY OF KUWAIT HARBOR, by H. W. Dubach and T. J. Wehe, 1959, 43 pp., \$.90 - A descriptive analysis of the oceanography of Kuwait Harbor and adjacent waters is presented based on observations taken between November 1948 and May 1949
TR 117 PART 1	HARBOR ANALOG SYSTEM - WAVES, by A. L. Grabham, 1961, 33 pp., \$.40 - This report classifies the harbors and nearshore areas of the world into analogous groups with respect to the frequency distribution of wave heights and wave periods.
TR 154 PART 2	HARBOR ANALOG SYSTEM - TEMPERATURE STRUCTURE, by A. L. Grabham, 1963, 67 pp., \$.80 - This report classifies harbors and nearshore area (30 fathoms shoreward) into analogous groups according to mean air and mean water temperature, tide ranges, and fresh water influence.

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ICE

PUB NO	TITLE/NOMENCLATURE
HOP 240	BIBLIOGRAPHY ON ICE OF THE NORTHERN HEMISPHERE, 1945, 179 pp., \$2.00 - This is the first publication of bibliographic material compiled during World War II by the Hydrographic Office. The references in this list resulted from library research carried out in connection with the preparation of ice atlas of the northern hemisphere.
HOP 551	MANUAL OF ICE SEAMANSHIP, 1950, 127 pp., \$.75 - This publication has been prepared to make available the accumulated experience of past expeditions in a form convenient for use by present-day polar expeditions, whether operating for military, commercial, or scientific purposes.

ICE

PUB NO	TITLE/NOMENCLATURE
HOP 606D	HYDROGRAPHIC OFFICE OBSERVERS MANUAL - ICE OBSERVATIONS, 1968, 28 pp., \$.45 - This manual outlines procedures of ice observations, listing useful publications and illustrating methods of recording and reporting.
HOP 700 SEC 3	OCEANOGRAPHIC ATLAS OF THE NORTH ATLANTIC OCEAN - ICE, 1968, 165 pp., \$4.00 - This atlas is a compilation of published and unpublished data concerning the oceanography of the North Atlantic Ocean. This section contains data on the ice conditions of the area.
SP 22	AERIAL ICE RECONNAISSANCE, OBSERVATIONAL TECHNIQUES AND RECORDING AND REPORTING PROCEDURES, 1956, 14 pp., \$.25 Outlines the procedures employed in conducting aerial ice reconnaissance, specifically observational techniques and recording and reporting techniques.
SP 60 (65)	LONG-RANGE ICE OUTLOOK - EASTERN ARCTIC, 1965, 23 pp., \$.80 - An analysis of oceanographic and climatic data for forecasting ice growth during the winter 1964-65 and the climatic outlook for the 1965 Arctic shipping season.
SP 60 (67)	LONG-RANGE ICE OUTLOOK - EASTERN ARCTIC, 1967, 24 pp., \$.60 - An analysis of oceanographic and climatic data for forecasting ice growth during the winter 1966-67 and the climatic outlook for the 1967 Arctic shipping season.
SP 60 (68)	THE EASTERN ARCTIC ICE SEASONAL OUTLOOK, 1968, 8 pp., \$.10 - An analysis of oceanographic and climatic data for forecasting ice growth during the winter 1967-68 and the climatic outlook for the 1968 Arctic shipping season.
SP 70 (60)	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1960), 1962, 208 pp., \$2.00 - A summary of NAVOCEANO ice operations in the North American Arctic during 1960 is presented.
SP 70 (61)	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1961), 1964, 174 pp., \$1.85 - A summary of NAVOCEANO and Danish ice operations during 1961 is presented.
SP 70 (62)	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1962), 1965, 172 pp., \$2.00 - A summary of NAVOCEANO and Danish ice operations during 1962 is presented.

ICE

PUB NO	TITLE/NOMENCLATURE
SP 70 (63)	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1963), 1965, 188 pp., \$2.10 - A summary of NAVOCEANO and Danish ice operations during 1963 is presented.
SP 70 (64)	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1964), 1965, 188 pp., \$1.50 - A summary of NAVOCEANO and Danish ice operations during 1964 is presented.
SP 70 (65)	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1965), 1967, 166 pp., \$2.00 - A summary of NAVOCEANO and Danish ice operations during 1965 is presented.
SP 70 (66)	REPORT OF THE ARCTIC ICE OBSERVING AND FORECASTING PROGRAM (1966), 1968, 91 pp., \$1.00 - A summary of NAVOCEANO and Danish ice operations during 1966 is presented.
SP 70 (67)	REPORT OF THE ARCTIC ICE OBSERVING AND FORECASTING PROGRAM (1967), by G. J. Potocsky, 1968, 79 pp., \$1.00 - A summary of NAVOCEANO ice operations during 1967 is presented.
SP 80 (62)	ANTARCTIC ICE OBSERVATIONS OCTOBER 1962 - MARCH 1963, 1963, 56 pp., \$.55 - Charts depict aerial and ship-board ice observations in the Ross and Weddell Seas.
SP 80 (63)	ANTARCTIC ICE OBSERVATIONS OCTOBER 1963 - JANUARY 1964, 1965, 27 pp., \$.75 - Charts depict aerial and ship-board ice observations in the Ross and Weddell Seas.
SP 80 (64)	REPORT OF THE ANTARCTIC ICE OBSERVING AND FORECASTING PROGRAM (1964), 1966, 31 pp., \$1.30 - Summarizes NAVOCEANO Antarctic ice observations and forecasts made between October 1964 and January 1965.
SP 80 (65)	REPORT OF THE ANTARCTIC ICE OBSERVING AND FORECASTING PROGRAM (1965), 1967, 26 pp., \$.75 - Summarizes NAVOCEANO Antarctic ice observations and forecasts made from October thru December 1965.
SP 80 (66)	REPORT OF THE ANTARCTIC ICE OBSERVING AND FORECASTING PROGRAM (1966), 1967, 28 pp., \$.80 - Summarizes NAVOCEANO Antarctic ice observations and forecasts made from October 1966 through January 1967.
SP 82	MANUAL OF SHORT-TERM SEA ICE FORECASTING, by W. I. Wittmann and C. P. MacDowell, 1964, 142 pp., \$1.50

ICE

PUB NO	TITLE/NOMENCLATURE
SP 82	This manual represents an initial attempt to systematically present recommended methods of ice prediction.
SP 100 (66)	LONG-RANGE ICE OUTLOOK - ANTARCTIC (1966-67), by J. D. Johnson and G. J. Potocsky, 1966, 11 pp., \$.80 - An analysis of environmental data for forecasting ice growth and the climatic outlook for the Antarctic shipping season, during the austral winter 1966-67, are included.
SP 100 (67)	LONG-RANGE ICE OUTLOOK - ANTARCTIC (1967-68), by G. J. Potocsky and F. E. Kniskern, 1967, 11 pp., \$.45 - This report presents an outlook of expected sea ice conditions in the Ross Sea and McMurdo Sound regions for the period mid-November 1967 through mid-January 1968.
SP 100 (68)	LONG-RANGE ICE OUTLOOK - ANTARCTIC (1968-69), by G. J. Potocsky and F. E. Kniskern, 1968, 12 pp., \$.50 - This report presents an outlook of expected sea ice conditions in the Ross Sea and McMurdo Sound regions for the period mid-November 1968 through mid-January 1969.
TR 4	A PRACTICAL METHOD OF PREDICTING SEA ICE FORMATION AND GROWTH, by O. S. Lee and L. S. Simpson, 1954, 26 pp., \$.25 - A technique for predicting ice formation and growth is presented. Using the ice potential calculations and heat budget equations of various authors, new formulas are derived for computing ice growth in terms of known or predicted oceanographic and meteorological data.
TR 5	AN ANALYTICAL METHOD OF ICE POTENTIAL CALCULATION, by A. L. Brown, 1954, 13 pp., \$.40 - The techniques for computing the ice potential developed by Zubov and Defant are analyzed and a simplified, rapid, analytic method of computation is developed.
TR 6	THE ICE BUDGET OF THE ARCTIC PACK AND ITS APPLICATION TO ICE FORECASTING, by E. L. Corton, 1954, 13 pp., \$.45 - Contains a discussion of the annual cycle of the polar pack, as well as a statistical presentation of the amount of melting, amount of new ice formation, and the average age of the remaining polar ice under various assumptions.
TR 7	AN ANALYSIS OF ENVIRONMENTAL FACTORS AFFECTING ICE GROWTH, by E. B. Callaway, 1954, 31 pp., \$.35 - Discusses experimental evidence of effect of environmental

ICE

PUB NO	TITLE/NOMENCLATURE
TR 7	factors on growth of fresh and salt water ice. An equation relating these factors developed by Kolesnikov is evaluated and the results applied to forecasts in specific areas in USSR and Baffin Bay.
TR 22	LOCAL ENVIRONMENTAL FACTORS AFFECTING ICE FORMATION IN BONDRE STROMFJORD, GREENLAND, by J. R. D. Tapager, 1955, 26 pp., \$.30 - The formation and growth of sea ice in Sondre Stromfjord in autumn 1953 is described. The major environmental factors are listed.
TR 23	LOCAL ENVIRONMENTAL FACTORS AFFECTING ICE FORMATION IN NORTH STAR BUGT, GREENLAND, by R. J. McGough, 1956, 40 pp., \$.40 - Environmental factors influencing the formation and growth of sea ice in the area of North Star Bugt and Wolstenholme Fjord are studied.
TR 24	LOCAL ENVIRONMENTAL FACTORS AFFECTING ICE FORMATION IN TERRINGTON BASIN, LABRADOR, by O. S. Lee, 1955, 29 pp., \$.35 - This report discusses the annual cycle of ice growth and disintegration at Terrington Basin. The water circulation in the basin is described. The ice forecasting problem is outlined.
TR 49	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1954), 1955, 164 pp., \$1.50 - A summary of NAVOCEANO ice operations in the North American Arctic during 1954 is presented.
TR 50	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1955), 1956, 155 pp., \$1.50 - A summary of NAVOCEANO ice operations in the North American Arctic during 1955 is presented.
TR 51	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1956), 1957, 163 pp., \$1.50 - A summary of NAVOCEANO ice operations in the North American Arctic during 1956 is presented.
TR 52	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1957), 1958, 147 pp., \$1.50 - A summary of NAVOCEANO ice operations in the North American Arctic during 1957 is presented.
TR 60	FROST DEGREE DAY - RELATED ICE THICKNESS CURVES, AND HARBOR FREEZEUP AND BREAKUP DATES FOR SELECTED ARCTIC STATIONS, by F. E. Kniskern and G. J. Potocsky, 1955, 123 pp., \$1.50 - This report presents a compilation of

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PUB NO	TITLE/NOMENCLATURE
TR 60	available frost degree day data and sea ice information for selected stations.
TR 56	REPORT OF THE ICE OBSERVING AND FORECASTING PROGRAM (1958), 1959, 148 pp., \$1.50 - A summary of NAVOCZANG ice operations in the North American Arctic during 1958 is presented.
TR 80	STUDY OF OCEANOGRAPHIC CONDITIONS AS RELATED TO PROJECT POLYNIA, by C. W. Senior, 1961, 75 pp., \$.95 - This report presents a model to describe retardation of ice growth based on the air-bubbling system installed by KISTSLANT at Thule, Greenland.

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INSTRUMENTATION

PUB NO	TITLE/NOMENCLATURE
SP 41	OCEANOGRAPHIC INSTRUMENTATION - FINAL REPORT OF THE COMMITTEE ON INSTRUMENTATION, 1960, 215 pp., \$1.80 This publication presents a comprehensive report on the present development of oceanographic and geophysical instrumentation.

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INTERNATIONAL CODES

PUB NO	TITLE/NOMENCLATURE
HOP 100	MERCHANT MARINE HOUSE FLAGS AND STACK INSIGNIA, 1961, 199 pp., \$6.00 - This volume has been arranged to facilitate the recognition of the identification markings displayed on a merchant ship which denote ownership or other form of control over the movements of the ship by a shipping company or organization.
ESF 102	* INTERNATIONAL CODE OF SIGNALS FOR VISUAL, SOUND, AND RADIO COMMUNICATIONS, 1969, 156 pp., \$4.00 - The purpose of this publication is to provide ways and means of communication in situations related essentially to safety of navigation and persons, especially when language difficulties arise.

LIGHT LIST

PUB NO

TITLE/NOMENCLATURE

The following list contains a description of lighted navigational aids (except harbor lighted buoys) and fog signals on the coast lines. Storm signals, signal stations, radio direction finders, and radio beacons are also mentioned.

HOP 111A	GREENLAND, THE EAST COASTS OF NORTH AND SOUTH AMERICA (EXCLUDING CONTINENTAL USA EXCEPT THE EAST COAST OF FLORIDA) AND THE WEST INDIES, \$5.00
HOP 111B	THE WEST COASTS OF NORTH AND SOUTH AMERICA (EXCLUDING CONTINENTAL USA AND ALASKA), THE HAWAIIAN ISLANDS, AUSTRALIA, TASMANIA, NEW ZEALAND, AND THE ISLANDS OF THE NORTH AND SOUTH PACIFIC OCEANS, \$5.00
HOP 112	THE INDIAN OCEAN, PERSIAN GULF, RED SEA, ASIA, AND EAST COAST OF AFRICA, \$5.00
HOP 113	THE WEST COASTS OF EUROPE AND AFRICA, THE MEDITERRANEAN SEA, BLACK SEA, AND THE SEA OF AZOV, \$5.00
HOP 114	BRITISH ISLANDS, ENGLISH CHANNEL, AND NORTH SEA, \$5.00
HOP 115	NORWAY, ICELAND, AND ARCTIC OCEAN, \$5.00
HOP 116	BALTIC SEA, WITH KATTEGAT, BELTS AND SOUND, AND GULF OF BOTHNIA, \$5.00

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LORAN RATE TABLES

PUB NO

TITLE/NOMENCLATURE

The 221 Series Loran Tables contain the necessary data for the establishment of hyperbolic lines of position for the pertinent rate and the area of coverage indicated by the included chartlets.

HOP 221 (101)	BAFFIN BAY AREA - LORAN-A RATE 286, 1957, \$.70
HOP 221 (102)	BAFFIN BAY AREA - LORAN-A RATE 287, 1957, \$.70
HOP 221 (103)	NORTH ATLANTIC - LORAN-A RATE 116, 1958, \$.70
HOP 221 (104)	NORTH ATLANTIC - LORAN-A RATE 117, 1963, \$.70
HOP 221 (105)	NORTH ATLANTIC - LORAN-A RATE 112, 1968, \$.70

LORAN RATE TABLES

FJB NO	TITLE/NOMENCLATURE
HOP 221 (106)	NORTH ATLANTIC - LORAN-A RATE 1L3, 1953, \$.70
HOP 221 (107)	NORTH ATLANTIC - LORAN-A RATE 1H1, 1958, \$.70
HOP 221 (108)	WEST INDIES - LORAN-A RATE 2L2, 1959, \$.70
HOP 221 (109)	WEST INDIES - LORAN-A RATE 2L3, 1959, \$.70
HOP 221 (110)	NORTH ATLANTIC - LORAN-A RATE 1L0, 1963, \$.70
HOP 221 (111)	NORTH ATLANTIC - LORAN-A RATE 1L1, 1963, \$.70
HOP 221 (112)	DENMARK STRAIT AREA - LORAN-A RATE 1L5, 1963, \$.70
HOP 221 (113)	DENMARK STRAIT AREA - LORAN-A RATE 1L4, 1963, \$.70
HOP 221 (114)	EAST COAST USA - LORAN-A RATE 1H7, 1963, \$.70
HOP 221 (115)	ENGLISH CHANNEL - LORAN-A RATE 1S3, 1965, \$.70
HOP 221 (116)	BAY OF BISCAY - LORAN-A RATE 1S4, 1965, \$.70
HOP 221 (117)	NORTH ATLANTIC - LORAN-A RATE 1H2, 1962, \$.70
HOP 221 (118)	NORTH ATLANTIC - LORAN-A RATE 1H3, 1962, \$.70
HOP 221 (119)	NORTH ATLANTIC - LORAN-A RATE 1H5, 1962, \$.70
HOP 221 (120)	NORTH ATLANTIC - LORAN-A RATE 1H4, 1962, \$.70
HOP 221 (121)	NORTH ATLANTIC - LORAN-A RATE 1H6, 1962, \$.70
HOP 221 (122)	NORTH SEA - LORAN-A RATE 1S1, 1965, \$.70
HOP 221 (123)	NORTH SEA - LORAN-A RATE 1S2, 1965, \$.70
HOP 221 (124)	WEST PORTUGAL - LORAN-A RATE 1S5, 1968, \$.70
HOP 221 (125)	AZORES - LORAN-A RATE 1S6, 1969, \$.70
HOP 221 (126)	AZORES - LORAN-A RATE 1S7, 1968, \$.70
HOP 221 (127)	GULF OF MEXICO - LORAN-A RATE 3H5, 1963, \$.70
HOP 221 (128)	GULF OF MEXICO - LORAN-A RATE 3H1, 1968, \$.70
HOP 221 (201)	SOUTH JAPAN - LORAN-A RATE 2S7, 1964, \$.70
HOP 221 (202)	SOUTH JAPAN - LORAN-A RATE 2H6, 1964, \$.70

LORAN RATE TABLES

PUB NO	TITLE/NOMENCLATURE
HOP 221 (203)	SOUTH JAPAN - LORAN-A RATE 2H7, 1966, \$.70
HOP 221 (204)	CENTRAL PACIFIC - LORAN-A RATE 2L7, 1962, \$.70
HOP 221 (205)	ASIATIC AREA - LORAN-A RATE 2H4, 1958, \$.70
HOP 221 (206)	ASIATIC AREA - LORAN-A RATE 2H3, 1958, \$.70
HOP 221 (207)	ASIATIC AREA - LORAN-A RATE 1L6, 1958, \$.70
HOP 221 (208)	ASIATIC AREA - LORAN-A RATE 1L7, 1958, \$.70
HOP 221 (209)	CENTRAL PACIFIC - LORAN-A RATE 2L6, 1958, \$.70
HOP 221 (210)	CENTRAL PACIFIC - LORAN-A RATE 1L1, 1958, \$.70
HOP 221 (211)	CENTRAL PACIFIC - LORAN-A RATE 1L0, 1958, \$.70
HOP 221 (213)	CENTRAL PACIFIC - LORAN-A RATE 2L5, 1966, \$.70
HOP 221 (214)	WEST COAST USA - LORAN-A RATE 2H2, 1959, \$.70
HOP 221 (215)	WEST COAST USA - LORAN-A RATE 2H3, 1959, \$.70
HOP 221 (216)	WEST COAST USA - LORAN-A RATE 2H4, 1959, \$.70
HOP 221 (217)	WEST COAST USA - LORAN-A RATE 2H5, 1959, \$.70
HOP 221 (218)	JAPANESE AREA - LORAN-A RATE 2S3, 1958, \$.70
HOP 221 (219)	JAPANESE AREA - LORAN-A RATE 2S4, 1958, \$.70
HOP 221 (220)	WEST JAPAN - LORAN-A RATE 2S5, 1965, \$.70
HOP 221 (221)	WEST JAPAN - LORAN-A RATE 2S6, 1965, \$.70
HOP 221 (222)	SOUTH PACIFIC - LORAN-A RATE 2L1, 1965, \$.70
HOP 221 (223)	SOUTH PACIFIC - LORAN-A RATE 2L2, 1967, \$.70
HOP 221 (224)	SOUTH PACIFIC - LORAN-A RATE 2L3, 1966, \$.70
HOP 221 (225)	EAST JAPAN - LORAN-A RATE 2S1, 1960, \$.70
HOP 221 (226)	EAST JAPAN - LORAN-A RATE 2S2, 1960, \$.70
HOP 221 (227)	NORTH PACIFIC - LORAN-A RATE 1L2, 1966, \$.70
HOP 221 (228)	NORTH PACIFIC - LORAN-A RATE 1L3, 1966, \$.70

LORAN RATE TABLES

PUB NO	TITLE/NOMENCLATURE
HOP 221 (229)	NORTH PACIFIC - LORAN-A RATE 1L7, 1961, \$.70
HOP 221 (230)	NORTH PACIFIC - LORAN-A RATE 1L6, 1961, \$.70
HOP 221 (231)	PHILIPPINE SEA - LORAN-A RATE 2H5, 1964, \$.70
HOP 221 (232)	WEST COAST USA - LORAN-A RATE 2H1, 1963, \$.70
HOP 221 (233)	SOUTH JAPAN - LORAN-A RATE 2S0, 1967, \$.70
HOP 221 (1001)	EAST COAST USA - LORAN-C PAIR SS0-W, 1964, \$3.75
HOP 221 (1002)	EAST COAST USA - LORAN-C PAIR SS0-Y, 1964, \$3.75
HOP 221 (1003)	MEDITERRANEAN SEA - LORAN-C PAIR SL1-X, 1962, \$3.75
HOP 221 (1004)	MEDITERRANEAN SEA - LORAN-C PAIR SL1-Y, 1962, \$3.75
HOP 221 (1014)	EASTERN USA - LORAN-C PAIR SS7-Z, 1969, \$3.75
HOP 221 (2001)	NORTH PACIFIC - LORAN-C PAIR SL2-X, 1967, \$3.75
HOP 221 (2002)	NORTH PACIFIC - LORAN-C PAIR SL2-Y, 1967, \$3.75
HOP 221 (2006)	NORTHWEST PACIFIC - LORAN-C PAIR SS3-W, 1968, \$3.75
HOP 221 (2007)	NORTHWEST PACIFIC - LORAN-C PAIR SS3-X, 1968, \$3.75
HOP 221 (2008)	NORTHWEST PACIFIC - LORAN-C PAIR SS3-Y, 1967, \$3.75
HOP 221 (2009)	NORTHWEST PACIFIC - LORAN-C PAIR SS3-Z, 1967, \$3.75
HOP 221 (2010)	SOUTHEAST ASIA - LORAN-C PAIR S3-X, 1967, \$3.75
HOP 221 (2011)	SOUTHEAST ASIA - LORAN-C PAIR S3-Y, 1967, \$3.75
HOP 223	AUXILIARY TABLES FOR LORAN COMPUTATION, 1948, 133 pp., \$2.50 - The tables consist of the tabulations of the required natural trigonometric functions of the parametric latitudes corresponding to all geodetic latitudes as well as the geodesic distances which are tabulated in microseconds.

LORAN RATE TABLES

PUB NO	TITLE/NOMENCLATURE
OMEGA LATTICE TABLES - These tables contain necessary data for the establishment of hyperbolic Omega lines of position for the pertinent station pair and area listed on the publication. These lines of position may be plotted and labeled in the same manner and on the same plotting sheets or charts used for celestial navigation.	
HOP 224 (101)	PAIR A-C - NORTHERN EUROPE - AREA 01, 1967, \$.75 PAIR A-D - NORTHERN EUROPE - AREA 01, 1967, \$.75 PAIR B-D - NORTHERN EUROPE - AREA 01, 1967, \$.75 PAIR C-D - NORTHERN EUROPE - AREA 01, 1967, \$.75
HOP 224 (102)	PAIR A-C - CENTRAL USSR - AREA 02, 1968, \$.75 PAIR A-D - CENTRAL USSR - AREA 02, 1968, \$.75 PAIR B-C - CENTRAL USSR - AREA 02, 1968, \$.75 PAIR C-D - CENTRAL USSR - AREA 02, 1968, \$.75
HOP 224 (103)	PAIR A-C - EASTERN USSR - AREA 03, 1968, \$.75 PAIR A-D - EASTERN USSR - AREA 03, 1968, \$.75 PAIR B-C - EASTERN USSR - AREA 03, 1968, \$.75 PAIR C-D - EASTERN USSR - AREA 03, 1968, \$.75
HOP 224 (104)	PAIR A-B - ALASKA - AREA 04, 1967, \$.75 PAIR A-D - ALASKA - AREA 04, 1967, \$.75 PAIR B-C - ALASKA - AREA 04, 1967, \$.75 PAIR C-D - ALASKA - AREA 04, 1967, \$.75
HOP 224 (105)	PAIR A-B - CANADA - AREA 05, 1967, \$.75 PAIR A-C - CANADA - AREA 05, 1969, \$.75 PAIR A-D - CANADA - AREA 05, 1969, \$.75 PAIR B-C - CANADA - AREA 05, 1967, \$.75 PAIR B-D - CANADA - AREA 05, 1967, \$.75 PAIR C-D - CANADA - AREA 05, 1967, \$.75
HOP 224 (106)	PAIR A-B - GREENLAND - AREA 06, 1967, \$.75 PAIR A-C - GREENLAND - AREA 06, 1969, \$.75 PAIR A-D - GREENLAND - AREA 06, 1967, \$.75 PAIR B-C - GREENLAND - AREA 06, 1967, \$.75 PAIR B-D - GREENLAND - AREA 06, 1967, \$.75 PAIR C-D - GREENLAND - AREA 06, 1969, \$.75
HOP 224 (107)	PAIR A-B - MEDITERRANEAN - AREA 07, 1968, \$.75 PAIR A-D - MEDITERRANEAN - AREA 07, 1968, \$.75 PAIR B-C - MEDITERRANEAN - AREA 07, 1968, \$.75 PAIR B-D - MEDITERRANEAN - AREA 07, 1968, \$.75
HOP 224 (110)	PAIR A-B - CENTRAL PACIFIC - AREA 10, 1967, \$.75 PAIR A-C - CENTRAL PACIFIC - AREA 10, 1967, \$.75 PAIR A-D - CENTRAL PACIFIC - AREA 10, 1967, \$.75 PAIR C-D - CENTRAL PACIFIC - AREA 10, 1967, \$.75

LORAN RATE TABLES

PUB NO	TITLE/NOMENCLATURE
HOP 224 (111)	PAIR A-B - NORTH AMERICA - AREA 11, 1967, \$.75 PAIR A-C - NORTH AMERICA - AREA 11, 1967, \$.75 PAIR B-C - NORTH AMERICA - AREA 11, 1967, \$.75 PAIR B-D - NORTH AMERICA - AREA 11, 1967, \$.75 PAIR C-D - NORTH AMERICA - AREA 11, 1967, \$.75
HOP 224 (112)	PAIR A-C - NORTH ATLANTIC - AREA 12, 1967, \$.75 PAIR A-D - NORTH ATLANTIC - AREA 12, 1967, \$.75 PAIR B-C - NORTH ATLANTIC - AREA 12, 1967, \$.75 PAIR B-D - NORTH ATLANTIC - AREA 12, 1967, \$.75
HOP 224 (117)	PAIR A-B - EAST PACIFIC - AREA 17, 1967, \$.75 PAIR B-C - EAST PACIFIC - AREA 17, 1967, \$.75 PAIR B-D - EAST PACIFIC - AREA 17, 1967, \$.75 PAIR C-D - EAST PACIFIC - AREA 17, 1967, \$.75
HOP 224 (118)	PAIR A-B - SOUTH ATLANTIC - AREA 18, 1967, \$.75 PAIR A-C - SOUTH ATLANTIC - AREA 18, 1967, \$.75 PAIR A-D - SOUTH ATLANTIC - AREA 18, 1967, \$.75 PAIR C-D - SOUTH ATLANTIC - AREA 18, 1967, \$.75

OMEGA SKYWAVE CORRECTION TABLES - A specific table of corrections is printed for each station pair at each grid point. Each table contains a matrix of skywave correction values arranged horizontally by Greenwich Mean Time (GMT) and vertically in semimonthly periods.

HOP 224 (106-C)	GREENLAND - AREA 06 (MODIFIED), \$1.75
HOP 224 (111-C)	NORTH AMERICA - AREA 11 (MODIFIED), \$1.75
HOP 224 (112-C)	NORTH ATLANTIC - AREA 12 (MODIFIED), \$1.75
HOP 224 (206-C)	GREENLAND - AREA 06 (MODIFIED), \$1.75
HOP 224 (211-C)	NORTH AMERICA - AREA 11 (MODIFIED), \$1.75
HOP 224 (212-C)	NORTH ATLANTIC - AREA 12 (MODIFIED), \$1.75

LORAN LATTICE TABLES - These tables give directly the loran-signal travel time in microseconds between two positions having coordinates of integral degrees of latitude and longitude. This also provides the azimuth (bearing) angle of the terminal position from the initial position, measured east or west from the elevated pole.

HOP 245 VOL 1	LORAN LATTICE TABLES - 0° - 23°, 1953, \$3.00
HOP 245 VOL 2	LORAN LATTICE TABLES - 24° - 47°, 1953, \$3.00

LORAN RATE TABLES

PUB NO	TITLE/NOMENCLATURE
HOP 245 VOL 3	LORAN LATTICE TABLES - 48° - 65°, 1953, \$3.00
HOP 245 VOL 4	LORAN LATTICE TABLES - 66° - 90°, 1953, \$3.00
HOP 245 (SUPP)	LORAN LATTICE NOMOGRAM, \$.20
HOP 11691	LORAN INTERPOLATOR, \$.20 - This interpolator assists interpolation on loran charts.

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MAGNETIC

PUB NO	TITLE/NOMENCLATURE
HOP 226	HANDBOOK OF MAGNETIC COMPASS ADJUSTMENT AND COMPENSATION, by N. S. Pencer and G. F. Kucera, 1945, 150 pp., \$1.00 - This publication presents all pertinent information regarding the practical procedures of adjustment and compensation in one text.
HCP 523	DIRECTIONS FOR MAGNETIC MEASUREMENTS, 1954, 17 pp., \$.60 - This manual presents brief and concise instructions for magnetic observations by field personnel, describing step-by-step procedures for using the instruments available in this office.
HOP 15373	+ GENERAL SPECIFICATIONS - GEOMAGNETIC SURVEY, 1959, 11 pp., \$.75 - This publication governs the conduct of airborne geomagnetic surveys under the technical control of the hydrographer, and the reduction of data and preparation of reports resulting therefrom.
HOP 15623	SHORT PERIOD FLUCTUATIONS - EARTH'S MAGNETIC FIELD, 1952, 52 pp., \$.60 - This manual contains the necessary charts which could be used to determine, for any location, the frequency of occurrence of fluctuations of specified amplitude and duration for each of the three components of the earth's magnetic field.
SP 66	AIRBORNE GEOMAGNETIC DATA (1953-1961), 1963, 573 pp., \$6.50 - This publication is a tabulation of geomagnetic data accrued by PROJECT MAGNET through 1961. This project, operating on a continuing basis, is now the most extensive effort ever taken in world magnetic surveying.

+ Temporarily out of print.

MAGNETIC

PUB NO	TITLE/NOMENCLATURE
SP 66 SUPP 1	AIRBORNE GEOMAGNETIC DATA, 1965, 265 pp., \$2.00 - This supplement is an addendum of data from 1962 through 1963 and also provides an appendix of corrections for SP 66.
TR 133	A MARINE MAGNETIC SURVEY OFF THE EAST COAST OF THE UNITED STATES, 1962, 29 pp., \$.40 - This report describes the geomagnetic character of an extensive area off the east coast of the United States and its relation to bathymetric and available seismic data.
TR 137	A MARINE MAGNETIC SURVEY SOUTH OF THE HAWAIIAN ISLANDS, 1962, 47 pp., \$.85 - This report describes the detailed marine magnetic surveys conducted in a 56,000 square mile area south of the Hawaiian Islands. The data reveal magnetic lineations which suggest that a major fault zone occurs in this region.
TR 144	A STUDY OF AEROMAGNETIC COMPONENT DATA - PLANTAGENET BANK, by G. A. Young and A. L. Kontis, 1964, 18 pp., \$.30 - Data from an aeromagnetic survey under Loran-C control are used to compute the anomalous components and elements of the magnetic feature associated with Plantagenet Bank.
TR 159	A MARINE MAGNETIC SURVEY OF THE NEW ENGLAND SEAMOUNT CHAIN, by J. E. Walczak, 1963, 37 pp., \$.40 - A systematic marine survey disclosed a close correlation between magnetic and bathymetric features.
TR 160	MARINE MAGNETIC SURVEY OFF THE SOUTHERN BAHAMAS - PROJECT M-15, by D. R. Bracey and O. E. Avery, 1963, 29 pp., \$.40 - A geomagnetic survey has revealed three distinctive magnetic lineations which may indicate that the area is the focus of three major faults or fault zones.
TR 161	GEOMAGNETIC AND BATHYMETRIC PROFILES ACROSS THE NORTH ATLANTIC OCEAN, by O. E. Avery, 1963, 74 pp., \$1.35 - This report presents geomagnetic and bathymetric profiles from two North Atlantic crossings between New York and the Norwegian Sea.
TR 166	A STUDY OF AEROMAGNETIC DATA - NEW ENGLAND SEAMOUNT AREA, by A. L. Kontis and G. A. Young, 1965, 18 pp., \$.70 - This report presents the results of a detailed aeromagnetic survey of a 38,000 square mile area off the coast of New England.

MAGNETIC

PUB NO	TITLE/NOMENCLATURE
TR 168	MARINE MAGNETIC SURVEYS IN THE NORTHWEST PACIFIC OCEAN, by D. R. Bracey, 1963, 11 pp., \$.25 - This report presents geomagnetic surveys in the Northwest Pacific showing steep, high amplitude magnetic anomalies occurring on or near the continental shelf off the Kamchatka Peninsula.
TR 207	AN EVALUATION OF THE 1965.0 EPOCH - HO 1706 WORLD MAGNETIC VARIATION CHART, by D. W. Hill, 1968, 303 pp., \$2.00 - An evaluation of the 1965.0 Epoch, HO 1706 World Magnetic Variation Chart is performed by direct comparison of charted and observed values. Results of this study provide an estimate of chart reliability based on the correlation of the computed spherical harmonic surface and individual field data values.

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MANUALS

PUB NO	TITLE/NOMENCLATURE
HOP 257	RADAR PLOTTING MANUAL, 1960, 45 pp., \$.35 - This manual provides a helpful guide to the effective use of radar in averting collision. Detailed instructions are included for use of the HO 4655 series radar plotting sheets.
SP 4	U. S. NAVAL OCEANOGRAPHIC OFFICE TECHNICAL SPECIFICATIONS FOR U. S. NAVAL SURVEYS AND SUPPLEMENTARY DATA, 1961, 156 pp., \$4.50 - This manual provides guidance for all activities and personnel concerned with observing and reporting hydrographic, oceanographic, geophysical, and aeronautical information to the Oceanographic Office.

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MARINE BIOLOGY

PUB NO	TITLE/NOMENCLATURE
TR 47	A STUDY OF THE TYPES, SEASONS OF ATTACHMENT, AND GROWTH OF FOULING ORGANISMS IN THE APPROACHES TO NORFOLK, VIRGINIA, by W. E. Maloney, 1958, 35 pp., \$.60 - This report presents the results and analyses of one year's marine biological fouling data obtained along the bottom near Thimble Shoal Channel in lower Chesapeake Bay.

MARINE BIOLOGY

PUB NO	TITLE/NOMENCLATURE
TR 96	MARINE BIOLOGICAL FOULING IN THE APPROACHES TO CHESAPEAKE BAY, by F. M. Daugherty, Jr., 1961, 40 pp., \$.45 This report gives the results and analyses of three and one-half year's marine biological fouling data obtained along the bottom in the approaches to Chesapeake Bay.
TR 157	SHARKS OF THE FAMILY LAMNIDAE, by G. S. Farquhar, 1963, 22 pp., \$.30 - This report is a summary of available data on some aspects of the biology of the lamnid sharks.
TR 184	THE DISTRIBUTION AND CHARACTERISTICS OF SURFACE BIOLUMINESCENCE IN THE OCEANS, by R. F. Staples, 1966, 54 pp., \$.90 - This report consists of an analysis of about 3,000 reports of bioluminescence displays that are on file at the U. S. Naval Oceanographic Office. Various aspects of bioluminescence, bioluminescent organisms, and distribution are also discussed.

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METEOROLOGICAL STUDIES

PUB NO	TITLE/NOMENCLATURE
HOP 119	WEATHER STATION INDEX, 1968, 128 pp., \$.50 - This publication contains the International Index Numbers authorized by the World Meteorological Organization.
The purpose of the following publications is to provide a ready reference for weather conditions in strategic areas of offensive aircraft and amphibious operations.	
HOP 222	STRATEGIC AEROLOGICAL SURVEY - ATLANTIC AREA, 1943, \$2.00
HOP 222A	STRATEGIC AEROLOGICAL SURVEY - PACIFIC AREA, 1943, \$2.00
TR 54	METEOROLOGICAL AND OCEANOGRAPHIC FACTORS RELATING TO ANTARCTIC AIR-SEA RESCUE OPERATIONS AND HUMAN SURVIVAL, 1957, 67 pp., \$.75 - This report presents meteorological and oceanographic background information for the supply corridor between New Zealand and McMurdo Sound, Antarctica.

NAVIGATION

PUB NO	TITLE/NOMENCLATURE
HOP 9	* AMERICAN PRACTICAL NAVIGATOR, 1962, 1524 pp., \$7.00 This publication is popularly referred to as BOWDITCH and is one of the best complete and popular reference texts available to the navigator. It includes electronic navigation, a glossary of navigational terms, hydrography, oceanography, and weather.
HOP 9 PART 2	USEFUL TABLES FROM AMERICAN PRACTICAL NAVIGATOR, 1958, 387 pp., \$1.25 - This part consists of tables and work forms. It is published separately for the convenience of the navigator.
HOP 9 PART 3	ELECTRONIC NAVIGATION - AMERICAN PRACTICAL NAVIGATOR, 1958, 348 pp., \$.65 - This part contains topics of radio waves; electronics and navigation; direction and distance by electronics; and hyperbolic systems.
HOP 208	NAVIGATION TABLES FOR MARINERS AND AVIATORS, by Dreisonstok, 1942, 109 pp., \$1.20 (to be discontinued 31 December 1970) - These tables are designed to facilitate the navigation of surface or aircraft. Used with Nautical or Air Almanacs, no other books are required. The method of solving navigational observations as given is applied to all sights regardless of the position of the celestial body, be it sun, moon, planet, or star.
HOP 211	DEAD RECKONING ALTITUDE AND AZIMUTH TABLES, by A. A. Ageton, 1943, 49 pp., \$.90 (to be discontinued 31 December 1972) - This publication requires few figures and gives quick solution for determining line of position; compass error; great circle course and distance; time of body on the prime vertical; and reduction to meridian. The accuracy of the azimuth fully justifies its use in obtaining compass error in all cases. The table is simple to use.
These tables consist of tabulated solutions of the navigational triangle, so arranged as to yield computed altitude and azimuth angle by inspection. The tables are applicable equally to observations of the sun, moon, planets, and navigational stars, whether observed in the north or south latitude. They are primarily for marine navigation. (To be canceled by HOP 229 on 31 December 1975.)	
HOP 214 VOL 1	TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 0° - 90° INCLUSIVE, 1940, \$3.75

NAVIGATION

PUB NO	TITLE/NOMENCLATURE
HOP 214 VOL 2	TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 10° - 19° INCLUSIVE, 1939, \$3.75
HOP 214 VOL 3	* TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 20° - 29° INCLUSIVE, 1939, \$3.75
HOP 214 VOL 4	TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 30° - 39° INCLUSIVE, 1935, \$3.75
HOP 214 VOL 5	* TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 40° - 49° INCLUSIVE, 1940, \$3.75
HOP 214 VOL 6	* TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 50° - 59° INCLUSIVE, 1940, \$3.75
HOP 214 VOL 7	TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 60° - 69° INCLUSIVE, 1941, \$3.75
HOP 214 VOL 8	TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 70° - 79° INCLUSIVE, 1941, \$3.75
HOP 214 VOL 9	TABLES OF COMPUTED ALTITUDE AND AZIMUTH - 80° - 89° INCLUSIVE, 1946, \$3.75
HOP 216	AIR NAVIGATION MANUAL, 1955, 717 pp., \$7.50 - This publication is a comprehensive instructional manual covering theoretical and practical aspects of air navigation. Included in this volume are such topics as celestial navigation, aeronautical navigation instruments and equipment, electronic navigation systems, pressure pattern navigation, and others. This publication is generally used as a text and reference book.
HOP 217	MANEUVERING BOARD MANUAL, 1963, 87 pp., \$1.00 - This manual provides a convenient reference and aid to the solution of relative movement problems by techniques compatible for use with radar.
HOP 220	NAVIGATION DICTIONARY, 1956, 253 pp., \$2.00 - This is a comprehensive and authoritative dictionary of widely used navigational terms. Included are symbols and abbreviations, described and defined in the language and from the viewpoint of the navigator.
HOP 249 VOL 1	* SIGHT REDUCTION TABLES FOR AIR NAVIGATION (SELECTED STARS) EPOCH 1970.0, 1967, 324 pp., \$3.75 - This vol-

NAVIGATION

PUB NO	TITLE/NOMENCLATURE
HOP 249 VOL 1	une contains the precomputed altitudes and azimuths of forty-one selected navigational stars representing solutions of the navigational triangle as required in usual navigation practices employing modern line of position method.
<p>The following two volumes contain the precomputed altitude and azimuths of the sun, moon, planets, and stars within the declination and latitude ranges indicated. These volumes provide complete data for the solutions of the navigational triangle as required in usual navigation practices employing modern line of position methods.</p>	
HOP 249 VOL 2	SIGHT REDUCTION TABLES FOR AIR NAVIGATION - LATITUDES 0° - 39° DECLINATIONS 0° - 29° , 1952 (Reprinted 1958, 1961 and 1963), 240 pp., \$2.50
HOP 249 VOL 3	SIGHT REDUCTION TABLES FOR AIR NAVIGATION - LATITUDES 40° - 89° DECLINATIONS 0° - 29° , 1952 (Reprinted 1961 and 1965), 338 pp., \$2.50
HOP 260	* AZIMUTHS OF THE SUN AND OTHER CELESTIAL BODIES OF DECLINATION 0° TO 23° , 1934 (Reprinted 1964), 226 pp., \$2.25 - This publication is popularly referred to as RED AZIMUTH TABLES. The principle object of these tables is to furnish the elements for finding the deviation of the magnetic compass and the error of the gyro compass.
HOP 261	AZIMUTH OF CELESTIAL BODIES - DECLINATION 24° - 70° , 1940, 122 pp., \$1.50 - This publication is popularly referred to as BLUE AZIMUTH TABLES. It contains azimuths or true bearings of celestial bodies between 0° and 70° north or south latitudes and 24° and 70° north and south declination. The values of the azimuths are computed on the basis of latitude and declination having the same name.
HOP 606A	HYDROGRAPHIC OFFICE OBSERVERS MANUAL - NAVIGATIONAL OBSERVATIONS, 1956, 30 pp., \$.15 - This pamphlet assists the observer in preparing reports that will be of maximum value in keeping the charts and publications up to date.
HOP 16380	INSTRUCTIONS FOR COLLECTION OF NAVIGATIONAL INFORMATION, 1955, \$.60 - This pamphlet describes the more important types of hydrographic, oceanographic, and meteorological information which the Oceanographic

NAVIGATION

PUB NO	TITLE/NOMENCLATURE
HOP 16380	Office requires. It explains in detail how to collect, record, and transmit this information to this Office.
SP 1	APPLICATION OF WAVE FORECASTS TO MARINE NAVIGATION, by R. W. James, 1957, 85 pp., \$1.20 - The effects of currents, winds, and waves on ship propulsion are discussed. Methods are shown for the use of synoptic and prognostic wave charts in the selection of least-time tracks for marine navigation.
SP 87	STANDARD BEARING BOOK, 1965, 100 pp., \$.50 - This publication is designed for the Navy and Merchant Marines. The format provides optimum utility, economy, and flexibility, if information is recorded according to the recommended rules.
TR 97	FINAL REPORT ON DOPPLER NAVIGATION TEST, 1960, 19 pp., \$.30 - Self-contained airborne Doppler navigation systems were operationally tested to determine their capability to supply geographical positioning data for mapping with aerial photography.
TR 153	THREE-DIMENSIONAL PORTRAYAL OF AIRCRAFT INSTRUMENT APPROACH PROCEDURES, by D. O. Main and W. R. Campbell, 1965, 49 pp., \$2.00 - This report discusses the development of an improved manner of portraying instrument approach and landing (AL) procedures through the use of modified three-dimensional (3-D) charting technique.
TR 182	MATHEMATICAL MODELS FOR NAVIGATION SYSTEMS, by P. D. Thomas, 1965, 142 pp., \$2.00 - An evaluation is given of the inverse distance solution as used in loran-type charting with extensions of formulae to give distance and azimuths on the reference ellipsoid within a meter and a second respectively.
TR 188	TERRESTRIAL AND EARTH SATELLITE NAVIGATION SYSTEMS, by P. D. Thomas, 1966, 139 pp., \$1.80 - This report discusses satellite navigation and positioning systems against a background of terrestrial electromagnetic systems.

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OCEANOGRAPHIC SHIPS

PUB NO	TITLE/NOMENCLATURE
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The following volumes contain detailed descriptions and photographs of the major oceanographic vessels of the world. They give indication of oceanographic capabilities of these ships and is useful in planning international cooperative expeditions.

NODC G-2

VOL 1	OCEANOGRAPHIC VESSELS OF THE WORLD, 1961, \$4.50
VOL 2	OCEANOGRAPHIC VESSELS OF THE WORLD, 1963, \$4.50
VOL 3	OCEANOGRAPHIC VESSELS OF THE WORLD, 1966, \$4.50

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OCEANOGRAPHY

PUB NO	TITLE/NOMENCLATURE
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The following publications contain a series of short papers submitted to the U. S. Navy Symposiums on Military Oceanography conducted during the years indicated in the titles.

---	** FIRST U. S. NAVY SYMPOSIUM ON MILITARY OCEANOGRAPHY, 1964, 470 pp.
---	** SECOND U. S. NAVY SYMPOSIUM ON MILITARY OCEANOGRAPHY, VOLUME I, 1965, 446 pp.
---	** THIRD U. S. NAVY SYMPOSIUM ON MILITARY OCEANOGRAPHY, VOLUME II, 1966, 296 pp.
---	** FOURTH U. S. NAVY SYMPOSIUM ON MILITARY OCEANOGRAPHY, VOLUME I, 1967, 460 pp.
---	* OCEANOGRAPHY '67 - ANNUAL REPORT NAVAL OCEANOGRAPHIC OFFICE, 1967, 76 pp., \$.45 - This report provides a brief summary of the programs and efforts of the U. S. Naval Oceanographic Office.
---	* RDT&E AT THE UNITED STATES NAVAL OCEANOGRAPHIC OFFICE 1960 - 1966, 56 pp., \$.60 - This publication discusses the Research, Development, Test, and Evaluation Program taking place at the U. S. Naval Oceanographic Office.

** Limited distribution. Controlled by U. S. Naval Oceanographic Office, Washington, D. C. 20390.

OCEANOGRAPHY

PUB NC	TITLE/NOMENCLATURE
---	* SCIENCE AND THE SEA, 1967, 80 pp., \$.75 - A compilation of ten articles describing some of the practical aspects of the marine sciences. This publication provides both teacher and student with a few of the realistic problems that face the modern oceanographer.
HOP 9 PART 6	OCEANOGRAPHY - FROM AMERICAN PRACTICAL NAVIGATOR, 1958, 72 pp., \$.65 - Oceanography is the application of the sciences to the phenomena of the oceans. This publication covers the widely separated fields of geography, geology, chemistry, physics, and biology.
HOP 238	REFERENCES ON THE PHYSICAL OCEANOGRAPHY OF THE WEST PACIFIC OCEAN, 1952, 168 pp., \$2.40 - This is the second publication of bibliographic material compiled during WW II by the U. S. Navy Hydrographic Office.
HOP 607	* INSTRUCTION MANUAL FOR OBTAINING OCEANOGRAPHIC DATA, 1968, 199 pp., \$1.25 - This manual is designed to meet the increasing demand for an instruction manual which would provide standard instructions for carrying out basic oceanographic observations.
HOP 700 SEC 2	OCEANOGRAPHIC ATLAS OF THE NORTH ATLANTIC OCEAN - PHYSICAL PROPERTIES, 1967, 308 pp., \$4.00 - This atlas presents data concerning the oceanography of the North Atlantic Ocean. This section contains data on the physical properties of sea water.
HOP 700 SEC 5	OCEANOGRAPHIC ATLAS OF THE NORTH ATLANTIC OCEAN - MARINE GEOLOGY, 1965, 79 pp., \$2.00 - This atlas presents data concerning the oceanography of the North Atlantic Ocean. This section contains data on marine geology.

The following atlases contain information on tides, currents, temperature, salinity, density, ice, wind, sea, swell, geology, bathymetry, and biology.

HOP 705 PART 1	OCEANOGRAPHIC ATLAS OF THE POLAR SEAS - ANTARCTIC, 1957, 70 pp., \$2.50
HOP 705 PART 2	OCEANOGRAPHIC ATLAS OF THE POLAR SEAS, ARCTIC, 1958, 149 pp., \$5.00

The following volumes contain reference sources of oceanographic station

OCEANOGRAPHY

PUB NO	TITLE/NOMENCLATURE
	data (source material) available at National Oceanographic Data Center.
NODC C-1 VOL 1	REFERENCE SOURCES FOR OCEANOGRAPHIC STATION DATA, by C. R. Johnson, 1965, 185 pp., \$2.00
NODC C-1 VOL 2	REFERENCE SOURCES FOR OCEANOGRAPHIC STATION DATA, by C. R. Johnson, 1965, 139 pp., \$2.00
NODC C-3	INVENTORY OF ARCHIVED DATA, 1966, 120 pp, \$2.00 (paper cover), \$3.00 (hard cover) - This publication presents up-to-date information concerning the availability of different types of processed data for various geographic areas.
NODC C-4	FILMS ON OCEANOGRAPHY, 1966, 72 pp., \$.75 - This publication contains descriptions of films on oceanography and pertinent information about their availability.
NODC C-5	COMPUTER PROGRAMS IN OCEANOGRAPHY, by C. H. Dinger, 1967, 93 pp., \$1.00 - This publication contains a compilation of computer programs used in oceanography and related subjects by various government agencies, universities, and institutions in the United States and other countries.
NODC G-1	INTRODUCTION TO THE NATIONAL OCEANOGRAPHIC DATA CENTER, 1966, 19 pp., (No charge, furnished upon request) - This publication describes the function and mission of NODC.
NODC G-10	SELECTED IIOE TRACK CHARTS, 1966, 49 pp., \$.70 - This publication contains a number of automatically plotted cruise tracks of research vessels participating in the International Indian Ocean Expedition (IIOE).
NODC G-11	THE VARIABILITY OF WATER MASSES IN THE INDIAN OCEAN, by J. F. Gallagher, 1966, 74 pp., \$1.25 - A delineation of the boundaries of the subsurface water masses of the Indian Ocean is accomplished by means of temperature-salinity graphs of oceanographic stations which are located along intersecting cross-sectional lines. Circulation and properties of the surface water as well as the deep and bottom water are discussed.
NODC G-12	INDIAN OCEAN ATLAS - INTERPOLATED VALUES OF DEPTH, SALINITY, AND TEMPERATURE ON SELECTED SIGMA-T SURFACES, 1967, 61 pp., \$2.00 - This publication represents a

OCEANOGRAPHY

PUB NO	TITLE/NOMENCLATURE
NODC G-12	compilation of pre-International Indian Ocean Expedition data from the Indian Ocean available in the archives of the National Oceanographic Data Center.
SP 53	SUMMARY OF OCEANOGRAPHIC CONDITIONS IN THE INDIAN OCEAN, 1960, 142 pp., \$1.15 - This publication was compiled as a planning aid for the International Indian Ocean Expedition. The 177 graphics contained are an analysis of the observable factors of marine meteorology and oceanography available to 1955.
SP 68	* HANDBOOK OF OCEANOGRAPHIC TABLES, by E. L. Bialek, 1966, 427 pp., \$6.25 - The tables included in this publication are intended to furnish oceanographers and oceanographic engineers with a ready reference of the more useful oceanographic tables.
SP 94	ENVIRONMENTAL ATLAS OF THE TONGUE OF THE OCEAN, 1967, 82 pp., \$1.00 - This atlas presents data on bottom materials and topography, sound velocity, physical properties of sea water, tides and currents, and marine and wave climatology. Coastal and bottom photographs are also included.
SP 116	TEACHERS OCEAN SCIENCE STUDY KIT, \$3.20 - The teachers kit contains the same items as the student kit but with additional material of more difficult nature to give the teachers background in providing guidance to the students.
SP 117	STUDENTS OCEAN SCIENCE STUDY KIT, \$1.60 - This kit contains oceanographic papers and charts selected for students of high school age. In addition, exercises are included to give students firsthand experience in contouring, charting, and data interpretation.
TR 48	FIELD REPORT - OCEANOGRAPHIC OBSERVATIONS - U. S. NAVY ANTARCTIC EXPEDITION (1954-1955) USS ATKA, 1956, 95 pp., \$1.00 - This report contains the summary and results of oceanographic operations in Antarctic and adjacent waters from the Ross Sea eastward through Bransfield Strait to the Weddell Sea.
TR 53	EVALUATION OF THE U. S. HYDROGRAPHIC OFFICE SHIP ROUTING PROGRAM, by R. W. James and G. L. Hansen, 1958, 31 pp., \$.60 - An evaluation of the 32 oceanographic route forecasts provided for MSTC vessels is discussed. Tables and charts are presented to summarize results.

OCEANOGRAPHY

PUB NO	TITLE/NOMENCLATURE
TR 58	OCEANOGRAPHIC OBSERVATIONS ARCTIC WATERS - TASK FORCE FIVE AND SIX, SUMMER-AUTUMN 1956, 1960, 89 pp., \$1.25 This report contains oceanographic data collected in various Arctic areas during summer and autumn 1956. Included are temperature, salinity, density, sound velocity, current, and bottom sediment data.
TR 59	OCEANOGRAPHIC OBSERVATIONS ARCTIC WATERS - TASK FORCE FIVE AND SIX, SUMMER-AUTUMN 1957, 1959, 145 pp., \$1.20 This report contains oceanographic data collected in various Arctic areas during summer and autumn 1957. Included are temperature, salinity, density, sound velocity, bathythermograph, current, and bottom sediment data.
TR 103	SUBMARINE GEOLOGY OF THE TONGUE OF THE OCEAN - BAHAMAS, by R. F. Busby, 1962, 84 pp., \$.75 - This publication presents a comprehensive report on the submarine geology of the Tongue of the Ocean, Bahamas. Material is based on both published and unpublished sources of information.
TR 125	SEASONAL OCEANOGRAPHIC STUDIES IN McMurdo Sound - ANTARCTICA, by W. L. Tressler and A. M. Omundsen, 1962, 141 pp., \$1.20 - This report presents data on temperature, salinity, dissolved oxygen, current, and bottom sediment along with notes on marine life.
TR 141	OCEANOGRAPHIC STATIONS TAKEN IN THE INDIAN OCEAN BY USCGC EASTWIND (WAGB-279) IN 1961, by W. L. Tressler, 1963, 84 pp., \$.75 - This report contains results of thirty oceanographic stations taken in the Indian Ocean by USCGC EASTWIND during a return voyage from Antarctic in 1961.
TR 172	SUBMARINE GEOMORPHOLOGY OF EASTERN ROSS SEA AND SULZBERGER BAY, ANTARCTICA, by L. K. Lepley, 1966, 34 pp., \$1.00 - This report graphically describes the submarine topography of the eastern Ross Sea and Sulzberger Bay areas of Antarctica.
TR 176	RESULTS OF THE PERSIAN GULF-ARABIAN SEA OCEANOGRAPHIC SURVEYS (1960-1961), 1965, 239 pp., \$4.20 - Contains results of oceanographic surveys in the Persian Gulf and Arabian Sea. Temperature and salinity profiles across the upper and lower Persian Gulf - Arabian Sea are presented.

OCEANOGRAPHY

PUB NO	TITLE/NOMENCLATURE
TR 189	OCEAN BOTTOM RECONNAISSANCE OFF THE EAST COAST OF ANDROS ISLAND, BAHAMAS, by R. F. Busby, C. V. Bright, and A. Pruna, 1966, 59 pp., \$1.10 - Presents results of a visual and photographic reconnaissance of the ocean bottom along selected routes off Andros Island, Bahamas.
TR 203	OCEANOGRAPHY IN THE CHANNEL ISLANDS AREA OFF SOUTHERN CALIFORNIA - SEPTEMBER AND OCTOBER 1965, by S. G. Tooma, Jr. and H. Iredale, III, 1968, 50 pp., \$.90 This report is a detailed environmental study of a survey conducted in the Channel Islands area off southern California. Major emphasis is on currents, sound velocity structure, and bottom composition.
TR 204	COMPARISONS OF REMOTE AIRBORNE OCEANOGRAPHIC SENSORS, by C. F. Beckner, Jr., 1968, 39 pp., \$.90 - Compares a number of remote sensors to determine feasibility of using them for detecting oceanographic features. Aerial photographs of a Rhodamine-B dye patch were also made to determine flow characteristics.

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OPERATION DEEP FREEZE

PUB NO	TITLE/NOMENCLATURE
TR 29	OPERATION DEEP FREEZE II (1956-1957) OCEANOGRAPHIC SURVEY RESULTS, 1957, 156 pp., \$1.35 - This report contains the summary and results of oceanographic operations in the Antarctic and adjacent waters in the period 1956-1957.
TR 33	U. S. NAVY HYDROGRAPHIC OFFICE REPORT ON OPERATION DEEP FREEZE I, 1956, 182 pp., \$1.50 - This report presents results of hydrographic, geodetic, astromonic, geophysical, and oceanographic operations during the Antarctic Survey.
TR 82	OPERATION DEEP FREEZE '60 (1959-1960) OCEANOGRAPHIC SURVEY RESULTS, 1961, 231 pp., \$1.75 - This report contains a summary and results of oceanographic operations in the Antarctic and adjacent waters.

OPERATION DEEP FREEZE

PUB NO	TITLE/NOMENCLATURE
TR 105	<p>OPERATION DEEP FREEZE '61 (1960-1961) - MARINE GEOPHYSICAL INVESTIGATIONS, 1962, 217 pp., \$1.25</p> <p>This report presents results of the Marine Geophysical Investigations in the Antarctic and adjacent waters. A discussion of the Antarctic convergence is also included.</p>
TR 118	<p>OPERATION DEEP FREEZE '62 (1961-1962) - MARINE GEOPHYSICAL INVESTIGATIONS, 1965, 157 pp., \$1.25</p> <p>This report presents results of the Marine Geophysical Investigations in the Antarctic and along USS BURTON ISLAND track to and from the Antarctica.</p>
TR 190	<p>OPERATIONS DEEP FREEZE '63 AND '64 - SUMMER OCEANOGRAPHIC FEATURES OF THE ROSS SEA, 1966, 193 pp., \$1.25 - This report identifies and shows distribution of the water masses in the Ross Sea. Data on the thermal structure, salinity, density, sound velocity, and dynamic topography are presented.</p>

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PHOTOGRAPHIC EQUIPMENTS

PUB NO	TITLE/NOMENCLATURE
TR 129	<p>OPERATIONAL EVALUATION OF EN-29A PHOTOGRAPHIC PROJECTION PRINTER (ORTHOGRAPHOTSCOPE), by R. F. Gettys, 1962, 16 pp., \$.35 - This report presents the procedures, results, and conclusions of operational tests performed to evaluate the orthophotoscope.</p>
TR 165	<p>OCEANOGRAPHIC OFFICE EVALUATION OF A VARIABLE MAGNIFICATION 70 MM ROLL FILM STEROSCOPIC VIEWER, by R. F. Gettys, 1964, 8 pp., \$.25 - This report summarizes an operational evaluation of a standard model Bausch & Lomb Zoom-7C stereoscope with 70 mm roll film scanning stage attachment.</p>

PILOT CHART ATLASES

PUB NO	TITLE/NOMENCLATURE
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The following atlases give information of ocean currents, weather, and other items of interest to navigators.

HOP 106	ATLAS OF PILOT CHARTS - CENTRAL AMERICAN WATERS AND SOUTH ATLANTIC, 1955, \$3.50
HOP 107	ATLAS OF PILOT CHARTS - SOUTH PACIFIC AND INDIAN OCEANS, 1966, \$3.50
HOP 108	ATLAS OF PILOT CHARTS - NORTHERN NORTH ATLANTIC, 1962, \$3.50

PLACE NAMES

PUB NO	TITLE/NOMENCLATURE
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HOP 10578	ESKIMO PLACE NAMES, by D. B. MacMillan, 1943, 154 pp., \$.50 - This publication is based upon the author's 35 years of personal contact with the natives of Labrador, Hudson Straits, Hudson Bay, Baffin Island, and South and North Greenland.
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RADIO AIDS

PUB NO	TITLE/NOMENCLATURE
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The following publications contain a list of radio stations which serve navigators upon the high seas and their adjacent waters. They also contain international and various national regulations on the subject.

HOP 117A	RADIO NAVIGATIONAL AIDS - ATLANTIC AND MEDITERRANEAN AREA, 1962, \$5.00
HOP 117B	RADIO NAVIGATIONAL AIDS - PACIFIC AND INDIAN OCEANS AREA, 1962, \$5.00

RADIO AIDS

PUB NO	TITLE/NOMENCLATURE
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The following publications contain information necessary for weather communications by radio. They also contain broadcast schedules, weather codes, various conversion tables and communication abbreviations.

HOP 118A	RADIO WEATHER AIDS - ATLANTIC AND MEDITERRANEAN AREA, 1963, \$5.00
HOP 118B	RADIO WEATHER AIDS - PACIFIC AND INDIAN OCEANS AREA, 1963, \$5.00

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SAILING DIRECTIONS

PUB NO	TITLE/NOMENCLATURE
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In contrast to a chart, a volume of sailing directions presents a verbal rather than a graphic description of navigable areas and the adjacent coasts which may be of interest to the mariner. When used in conjunction with a chart, it serves to verify and augment the chart information. If charts of sufficient scale or adequate quality are not available for an area, its specific directive language and accurate descriptions will enable a vessel to negotiate that area successfully.

AREA 1 - CANADA, GREENLAND, AND ICELAND

HOP 10	BRITISH COLUMBIA, VOL I - STRAIT OF JUAN DE FUCA AND INNER PASSAGES TO CAPE CAUTION, 1960, \$4.50
HOP 11	BRITISH COLUMBIA, VOL II - CAPE CAUTION TO ALASKA, 1962, \$4.50
HOP 12	NOVA SCOTIA - THE BAY OF FUNDY AND CAPE BRETON ISLAND, 1967, \$4.50
HOP 13	THE GULF AND RIVER ST LAWRENCE - WESTERN SHORES OF THE GULF AND THE RIVER AND SEAWAY TO CORNWALL ISLAND, 1951, \$4.50
HOP 14	NEWFOUNDLAND - INCLUDES STRAIT OF BELLE ISLE AND ST PIERRE AND MIQUELON ISLANDS, 1958, \$4.50
HOP 15	LABRADOR AND HUDSON BAY - LABRADOR NORTHEAST OF ST LEWIS SOUND, HUDSON STRAIT, AND HUDSON BAY, 1965, \$4.50

SAILING DIRECTIONS

PUB NO	TITLE/NOMENCLATURE
<u>AREA 1 - CANADA, GREENLAND, AND ICELAND</u>	
HOP 16	BAFFIN BAY AND DAVIS STRAIT - INCLUDES NORTHERN GREENLAND EASTWARD TO CAPE MORRIS JESUP, 1968, \$4.50
HOP 17	EAST GREENLAND AND ICELAND - INCLUDES THE ISLAND OF JAN MAYEN, 1951, \$4.50
<u>AREA 2 - LATIN AMERICA AND ANTARCTICA</u>	
HOP 20	EAST COASTS OF CENTRAL AMERICA AND MEXICO - INCLUDES NORTH COAST OF COLUMBIA, 1952, \$4.50
HOP 21	THE WEST INDIES, VOL I - BERMUDA, BAHAMAS, AND GREATER ANTILLES, 1958, \$4.50
HOP 22	THE WEST INDIES, VOL II - LESSER ANTILLES, AND VENEZUELA, 1963, \$4.50
HOP 23	SOUTH AMERICA, VOL I - EAST COAST FROM VENEZUELAN BORDER TO AND INCLUDING RIO DE LA PLATA, 1967, \$4.50
HOP 24	SOUTH AMERICA, VOL II - EAST AND WEST COASTS BETWEEN RIO DE LA PLATA AND CABO TRES MONTES, INCLUDING FALKLAND, SOUTH GEORGIA, AND SOUTH SANDWICH ISLANDS, 1952, \$4.50
HOP 25	SOUTH AMERICA, VOL III - WEST COAST BETWEEN GULF OF PANAMA AND CABO TRES MONTES, 1960, \$4.50
HOP 26	WEST COASTS OF MEXICO AND CENTRAL AMERICA - THE UNITED STATES BORDER TO COLUMBIAN BORDER, 1951, \$4.50
HOP 27	ANTARCTICA - INCLUDES ISLANDS SOUTH OF LATITUDE 60°, 1960, \$4.50
<u>AREA 3 - BRITISH ISLES AND NORTHWESTERN EUROPE</u>	
HOP 30	IRELAND, 1962, \$4.50
HOP 31	SOUTH COAST OF ENGLAND - SCILLY ISLES TO NORTH FORELAND, 1952, \$4.50
HOP 32	WEST COASTS OF ENGLAND AND WALES - LANDS END TO MULL OF GALLOWAY, INCLUDING ISLE OF MAN, 1951, \$4.50
HOP 33	WEST COAST OF SCOTLAND - MULL OF GALLOWAY TO CAPE WATTH, INCLUDING THE HEBRIDES, 1951, \$4.50

SAILING DIRECTIONS

PUB NO	TITLE/NOMENCLATURE
HOP 34	NORTH AND EAST COASTS OF SCOTLAND - CAPE WRATH OF FIFE NESS, INCLUDING ORKNEY, SHETLAND, AND FAEROE ISLANDS, 1950, \$4.50
HOP 35	EAST COAST OF ENGLAND - FIFE NESS TO NORTH FORELAND, INCLUDING THE FIRTH OF FORTH, 1951, \$4.50
HOP 36	EASTERN SHORES OF THE NORTH SEA - DUNKERQUE TO SKAGEN, 1959, \$4.50
HOP 37	NORTH COAST OF FRANCE - NORTHWESTERN END OF FRANCE TO BELGIUM, 1951, \$4.50
HOP 38	BAY OF BISCAY - WEST COAST OF FRANCE AND NORTH COAST OF SPAIN, 1951, \$4.50
<u>AREA 4 - BALTIC, SCANDINAVIA, AND NORTHERN USSR</u>	
HOP 40	NORTHERN AND EASTERN SHORES OF THE SKAGERRAK - LINDESNES TO MARSTRANDSFJORDEN, 1955, \$4.50
HOP 41	KATTEGAT AND THE SOUND - SKAGEN TO FALSTERBO, INCLUDING FAKSE BUGT, 1956, \$4.50
HOP 42	THE BALTIC, VOL I - STORE BAEIT, LILLE BAEIT, AND COAST FROM DENMARK TO KAP ARKONA, 1958, \$4.50
HOP 43	THE BALTIC, VOL II - BALTIC SEA FROM FALSTERBO UDDE AND KAP ARKONA TO THE GULFS OF FINLAND AND BOTHNIA, 1967, \$4.50
HOP 44	THE BALTIC, VOL III - GULFS OF FINLAND AND BOTHNIA, 1952, \$4.50
HOP 45	SOUTHWEST COAST OF NORWAY - LINDESNES TO FEDJE, 1955, \$4.50
HOP 46	NORTHWEST AND NORTH COASTS OF NORWAY - FEDJESEN TO NYEMYETSKI POINT, USSR, INCLUDING SVALBARD ARCHIPELAGO, 1952, \$4.50
HOP 47	NORTHERN USSR, VOL I - MYS NEMETSKIY TO MYSKANAI NOS, 1953, \$4.50
HOP 48	NORTHERN USSR, VOL II - MYS KANIN NOS TO OSTROV DIKSON, 1954, \$4.50
HOP 49	NORTHERN USSR, VOL III - OSTROV DIKSON TO MYS SHMIDTA, 1954, \$4.50

SAILING DIRECTIONS

PUB NO

TITLE/NOMENCLATURE

AREA 5 - MEDITERRANEAN AND WESTERN AFRICA

- HOP 50 SOUTHWEST COAST OF AFRICA - CAPE PALMAS TO CAPE OF
GOOD HOPE, 1951, \$4.50
- HOP 51 WEST COASTS OF SPAIN, PORTUGAL, AND NORTHWEST AFRICA
AND OFF-LYING ISLANDS - INCLUDES AZORES, MADEIRA,
CANARY AND CAPE VERDE ISLANDS, AND AFRICA SOUTHWARD
TO CAPE PALMAS, 1952, \$4.50
- HOP 52 THE MEDITERRANEAN, VOL I - STRAIT OF GIBRALTAR, SPAIN,
BALEARIC ISLANDS, NORTHERN AFRICA TO RAS AGEDIR, 1952,
\$4.50
- HOP 53 THE MEDITERRANEAN, VOL II - FRANCE, WEST COAST OF
ITALY, CORSICA, SARDINIA, AND SICILY INCLUDING AD-
JACENT ISLANDS, 1958, \$4.50
- HOP 54 THE MEDITERRANEAN, VOL III - SOUTHEAST ITALY, THE
ADRIATIC, AND WESTERN GREECE TO ALBA TAINARON, 1968,
\$4.50
- HOP 55 THE MEDITERRANEAN, VOL IV - LIBYA, EGYPT, ISRAEL,
LEBANON, SYRIA, AND SOUTHERN TURKEY INCLUDING IS-
LANDS OF CYPRUS, RHODOS, KARPATOS, AND CRETE,
1963, \$4.50
- HOP 56 THE MEDITERRANEAN, VOL V - THE AEGEAN SEA, 1952,
\$4.50

AREA 6 - MIDDLE EAST, EASTERN AFRICA, AND SOUTHERN ASIA

- HOP 60 SOUTHEAST COAST OF AFRICA - CAPE OF GOOD HOPE TO
RAS HAFUN, 1968, \$4.50
- HOP 61 THE RED SEA AND GULF OF ADEN - INCLUDES SUEZ CANAL,
GULF OF SUEZ, AFRICA NORTH OF RAS HAFUN, SUQUTRA,
AND ARABIAN COAST EASTWARD TO RA'S AL HADU, 1965,
\$4.50
- HOP 62 THE PERSIAN GULF - INCLUDES GULF OF OMAN AND NORTHERN
SHORE OF ARABIAN SEA EASTWARD TO RAS MUARI, 1960, \$4.50
- HOP 63 WEST COAST OF INDIA - INCLUDES CEYLON, MALDIVE, AND
LACCADIVE ISLANDS, 1967, \$4.50
- HOP 64 BAY OF BENGAL - POINT CALIMERE TO LAEM PAK PHRA AND
THE ANDAMAN AND NICOBAR ISLANDS, 1966, \$4.50

SAILING DIRECTIONS

PUB NO

TITLE/NOMENCLATURE

AREA 6 - MIDDLE EAST, EASTERN AFRICA, AND SOUTHERN ASIA

HOP 65 SOUTH INDIAN OCEAN - MADAGASCAR AND ISLANDS WESTWARD OF LONGITUDE 90°, 1952, \$4.50

AREA 7 - AUSTRALIA AND SOUTHWEST PACIFIC

HOP 70 MALACCA STRAIT AND SUMATRA - CENTRAL AND WESTERN SUMATRA AND SOUTHWESTERN MALAY PENINSULA, 1951, \$4.50

HOP 71 SOENDA STRAIT AND WESTERN AND NORTHEAST COASTS OF BORNEO AND OFF-LYING ISLANDS, 1951, \$4.50

HOP 72 JAVA; LESSER SUNDAS; SOUTH, SOUTHEAST, AND EAST COASTS OF BORNEO; AND CELEBES - EXCLUDES WESTERN END OF JAVA BETWEEN TANDJUNG TJANKUANG AND UDJUNG KRAWANG, 1952, \$4.50

HOP 73 NEW GUINEA - INCLUDES HALMAHERA AND ISLANDS SOUTHWARD, 1952, \$4.50

HOP 74 NORTH AND WEST COASTS OF AUSTRALIA - CAPE YORK TO CAPE LEEUWIN, 1952, \$4.50

HOP 75 EAST COAST OF AUSTRALIA - SYDNEY TO CAPE YORK, INCLUDING ISLANDS IN THE CORAL SEA, 1954, \$4.50

HOP 76 SOUTHEAST COAST OF AUSTRALIA - CAPE NORTHUMBERLAND TO PORT JACKSON, INCLUDING TASMANIA, 1952, \$4.50

HOP 77 SOUTH COAST OF AUSTRALIA - CAPE LEEUWIN TO CAPE NORTHUMBERLAND, 1950, \$4.50

HOP 78 NEW ZEALAND - INCLUDES KERMADEC ISLANDS AND ISLANDS EASTWARD AND SOUTHWARD OF NEW ZEALAND, 1952, \$4.50

AREA 8 - NORTH AND SOUTH PACIFIC

HOP 80 THE PACIFIC ISLANDS, VOL III - THE SOUTH-CENTRAL GROUPS, 1952, \$4.50

HOP 81 THE PACIFIC ISLANDS, VOL II - SANTA CRUZ AND NEW HEBRIDES GROUPS, NEW CALEDONIA, AND ADJACENT ISLANDS, 1952, \$4.50

HOP 82 THE PACIFIC ISLANDS, VOL I - WESTERN GROUPS, INCLUDING THE SOLOMON ISLANDS, 1964, \$4.50

SAILING DIRECTIONS

PUB NO	TITLE/NOMENCLATURE
HOP 90	PHILIPPINE ISLANDS, VOL I - NORTHERN ISLANDS, INCLUDING WESTERN NEGROS AND NORTHERN SAMAR, 1955, \$4.50
HOP 91	PHILIPPINE ISLANDS, VOL II - CENTRAL ISLANDS, INCLUDING EASTERN NEGROS, SOUTHERN SAMAR, AND NORTHERN MINDANAO, 1956, \$4.50
HOP 92	PHILIPPINE ISLANDS, VOL III - SOUTHERN MINDANAO, SULU ARCHIPELAGO, AND PALAWAN, 1956, \$4.50
HOP 93	WESTERN SHORES OF SOUTH CHINA SEA - SINGAPORE STRAIT TO HONG KONG, 1957, \$4.50
HOP 94	COAST OF CHINA - COAST NORTHWARD OF HONG KONG TO YALU CHIANG, AND ISLAND OF TAIWAN, 1959, \$4.50
HOP 95	JAPAN, VOL II (SOUTHERN PART) - THE NAIKAI AND ISLANDS SOUTHWARD, INCLUDING NANSEI SHOTO AND TSUSHIMA, 1951, \$4.50
HOP 96	JAPAN, VOL I (NORTHERN PART) - HONSHU, EXCEPT THE NAIKI, HOKKAIDO, CHISHIMA RETTO, AND NANPO SHOTO, 1967, \$4.50
HOP 97	SOUTHEAST COAST OF SIBERIA AND KOREA - SAKHALINSKIY ZALIV TO YALU CHIANG, INCLUDING SAKHALIN, 1951, \$4.50
HOP 98	EAST COAST OF SIBERIA - MYS OTTO SHMIDTA TO SAKHALINSKIY ZALIV, INCLUDING OSTROV VRANGELYA, 1951, \$4.50

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SEA AND SWELL

PUB NO	TITLE/NOMENCLATURE
HOP 601	THEORY OF RELATIONS FOR FORECASTING WIND, SEA, AND SWELL, by H. U. Sverdrup and W. H. Munk, 1947, 44 pp., \$.50 - In order to forecast sea and swell from weather data, it is necessary to know the character of the waves produced by a given wind blowing for a known length of time over a known stretch of water called the fetch. In this publication, a close combination of theoretical conclusion and empirical knowledge is attempted.

SEA AND SWELL

PUB NO	TITLE/NOMENCLATURE
HOP 604	TECHNIQUES FOR FORECASTING WIND, WAVES, AND SWELL, 1951, 36 pp., \$.75 - This manual deals with the generation of waves by wind and with the travel of waves in deep water after they left the regions of strong winds. Methods are described for determining the characteristics of wind waves by means of data from adequate consecutive synoptic weather maps and for forecasting swell off coasts.
HOP 606E	HYDROGRAPHIC OFFICE OBSERVERS MANUAL - SEA AND SWELL OBSERVATIONS, 1950, 8 pp., \$.15 - This manual describes how to make sea and swell observations and presents reporting procedures.
HOP 700 SEC 4	OCEANOGRAPHIC ATLAS OF THE NORTH ATLANTIC OCEAN - SEA AND SWELL, 1963, 227 pp., \$3.00 - This atlas presents data on waves, sea and swell, and winds of the North Atlantic Ocean.

In the following atlases, charting has been done on a monthly, seasonal, or yearly basis, depending on the availability and distribution of data and the type of information presented. Thus, wind, and sea and swell are shown on monthly charts whereas persistence of waves and wave period-height and period-direction are presented on a seasonal basis.

HOP 799B	ATLAS OF SEA AND SWELL CHARTS - SOUTH ATLANTIC, 1948, \$1.20
HOP 799CE	ATLAS OF SEA AND SWELL CHARTS - NORTHWEST AND SOUTHWEST PACIFIC OCEAN, 1943, \$1.60
HOP 799D	ATLAS OF SEA AND SWELL CHARTS - NORTHEASTERN PACIFIC OCEAN, 1944, \$2.00
HOP 799G	ATLAS OF SEA AND SWELL CHARTS - INDIAN OCEAN, 1944, \$1.20

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SEA WATER

PUB NO	TITLE/NOMENCLATURE
HOP 615	TABLES FOR SEA WATER DENSITY, 1952, 265 pp., \$4.00 - Tables designed for the research workers for the computation of sea water density of a high order of accuracy.

SEA WATER

PUB NO	TITLE/NOMENCLATURE
NODC C-9 VOL 1	WATER MASSES AND DENSITY STRATIFICATION ATLAS - WESTERN NORTH ATLANTIC OCEAN, by R. Kuhr, 1967, \$2.25 - This automatically plotted atlas depicts the water mass distribution and water density structure at intermediate depths, the portion of the water column between approximately 300 meters and 3,000 meters.
SP 11	TABLES FOR RAPID COMPUTATION OF DENSITY AND ELECTRICAL CONDUCTIVITY OF SEA WATER, 1956, 24 pp., \$.30 - Tables are presented for the rapid computation on a machine calculator of density (σ_t) and electrical conductivity of sea water from observed temperature and salinity values.

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SOUND

PUB NO	TITLE/NOMENCLATURE
HOF 606B	HYDROGRAPHIC OFFICE OBSERVERS MANUAL - SONIC SOUNDINGS, 1958, 13 pp., \$.20 - Modern electronic sounding and ranging devices have made the profile of the ocean floor the most universally accessible aid to navigation. This publication describes how to report sounding data to the U. S. Naval Oceanographic Office.
HOF 700 TEC 6	OCEANOGRAPHIC ATLAS OF THE NORTH ATLANTIC OCEAN - SOUND VELOCITY, 1967, 50 pp., \$1.50 - This atlas presents data concerning the oceanography of the North Atlantic Ocean. This section contains data on sound velocity.
SP 79	OCEANOGRAPHY FOR LONG RANGE SONAR SYSTEMS - PART I. INTRODUCTION TO OCEANOGRAPHY AND PHYSICS OF UNDERWATER SOUND IN THE SEA, by B. K. Swanson, 1966, 121 pp., \$2.50 This publication provides the necessary background in oceanography and underwater acoustics for the military user working in long range sonar systems or allied fields.
SP 84	OCEANOGRAPHY AND UNDERWATER SOUND FOR NAVAL APPLICATIONS, 1965 (Reprinted 1968), 142 pp., \$.75 - This publication presents information on the relationship of the oceanographic environment and underwater sound to antisubmarine warfare.

SOUND

PUB NO	TITLE/NOMENCLATURE
TR 211	MODIFICATION AND UTILIZATION OF AN/SSQ-41 SONOBUOYS FOR THE COLLECTION OF VOLUME REVERBERATION DATA FROM AIRCRAFT, by E. E. Davis, J. E. Parham, and C. E. Kelly, 1968, 49 pp., \$.75 - This report discusses the modifications, tests, calibration, and use of standard AN/SSQ-41 sonobuoys for the collection of volume reverberation data from aircraft. The results of the test and feasibility measurements using the prototype sonobuoys are also presented.

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SURVEYING

PUB NO	TITLE/NOMENCLATURE
---	THE OCEAN ENGINEERING PROGRAM OF THE U. S. NAVY, ACCOMPLISHMENTS AND PROSPECTS, 1967, 122 pp., \$.50 This report provides a comprehensive view of the Navy's engineering program, present and future. It outlines the capabilities and technological developments, and includes short descriptions of representative engineering test and support facilities.
HGP 215	+ HYDROGRAPHIC AND GEODETIC SURVEYING MANUAL, 1942, 252 pp., \$3.00 - This manual was compiled to present the requirements of the U. S. Navy for the execution of hydrographic and geodetic surveys, describing the methods and equipment used for such work.
HOP 16201	CONTROL SURVEYS OF THE EAST COAST OF LABRADOR, 1956, 162 pp., \$2.00 - This publication contains a compilation of the U. S. Navy triangulation on the east coast of Labrador. The main triangulation net extends from Hamilton Inlet southward to the Strait of Belle Isle.
HOP 16202	CONTROL SURVEYS ON SAIPAN AND TINIAN ISLANDS, 1956, 41 pp., \$.45 - This publication contains the results of all triangulation on Saipan and Tinian of the Marianas Islands executed by the U. S. Naval Hydrographic Office.

+ Temporarily out of print.

SURVEYING

PUB NO	TITLE/NOMENCLATURE
SP 122	OCEANOGRAPHIC SURVEYS - FISCAL YEAR '67, 1968, 33 pp., \$.75 - This report describes and locates all the unclassified oceanographic surveys done by or contracted for the U. S. Naval Oceanographic Office during the period 1 July 1966 thru 30 June 1967.

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TEMPERATURE AND SALINITY

PUB NO	TITLE/NOMENCLATURE
HOP 225	WORLD ATLAS OF SEA SURFACE TEMPERATURES, 1944, 49 pp., \$2.50 - This atlas, an accurate pattern of the world's sea surface temperatures, was prepared from all sea surface temperature data collected by NAVOCEANO, together with all available data from other sources.
NODC G-4	A SUMMARY OF TEMPERATURE-SALINITY CHARACTERISTICS OF THE PERSIAN GULF, by H. W. Dubach, 1964, 223 pp., \$2.50 This publication contains data and analyses of all temperature-salinity investigations made in the Persian Gulf since 1907, including charts for each observation series. This study is essentially divided into two parts: Historical Data and Analyses (pre-1950) and Recent Observations and Analyses (post-1950).
SP 99	MONTHLY CHARTS OF MEAN, MINIMUM, AND MAXIMUM SEA SURFACE TEMPERATURE OF THE INDIAN OCEAN, 1967, \$2.50 - This publication consists of a series of charts based on ship injection temperature data, which show the monthly mean, minimum, and maximum sea surface temperature of the Indian Ocean.
TR 70	SEA SURFACE TEMPERATURE SYNOPTIC ANALYSIS, by B. W. Gibson, 1962, 17 pp., \$.55 - This report presents an outline of the concepts and techniques employed for describing the sea surface temperature field.
TR 174	OCEANOGRAPHY OF THE EASTERN GREAT BAHAMA BANK - PART I. TEMPERATURE-SALINITY DISTRIBUTION, by R. F. Busby and G. F. Dick, Jr., 1964, 42 pp., \$.80 - This publication presents a report delineating the temperature and salinity distribution from observations made over a yearly period on the eastern Great Bahama Bank.

TIDES, WAVES, AND SURFACE CURRENTS

PUB NO	TITLE/NOMENCLATURE
HOP 234	BREAKERS AND SURF - PRINCIPLES IN FORECASTING, 1944, 69 pp., \$.40 - This publication describes the procedure for forecasting breakers and surf as well as the results of refraction and the verification of such forecasts by means of aerial photographs.
HOP 236	CURRENTS IN THE SOUTH CHINA, JAVA, CELEBES, AND SULU SEAS, 1945, 12 pp., \$.30 - This publication presents monthly chartlets indicating surface currents and wind data collected from 1904 to 1934.
HOP 237	OCEAN CURRENTS IN THE VICINITY OF THE JAPANESE ISLANDS AND CHINA COAST, 1964, 14 pp., \$.60 - This publication presents surface currents and wind data from all available sources. Prevailing currents, resultant set of tidal and wind driven currents, and mean current speed in knots are given.
The following atlases provide average monthly surface currents and temperatures observed during the months of all years prior to 1935.	
HOP 566	ATLAS OF SURFACE CURRENTS - INDIAN OCEAN, 1944, \$2.40
HOP 568	ATLAS OF SURFACE CURRENTS - SOUTHWESTERN PACIFIC OCEAN, 1944, \$2.40
HOP 569	ATLAS OF SURFACE CURRENTS - NORTHWESTERN PACIFIC OCEAN, 1953, \$2.40
HOP 570	ATLAS OF SURFACE CURRENTS - NORTHEASTERN PACIFIC OCEAN, 1947, \$2.40
HOP 602	WIND, WAVES AT SEA, BREAKERS AND SURF, by S. Bigel and W. T. Edmondson, 1947, 117 pp., \$2.80 - This publication presents a detailed and non-technical discussion of the subject based on the researches of eminent scientists and on the observations of thousands of seafaring men throughout the past century. The mariner will find in this volume much of value that will assist him in the safe and economical operation of vessels on the high seas, in restricted waters, and in the surf zone.
HOP 603	PRACTICAL METHODS FOR OBSERVING AND FORECASTING OCEAN WAVES BY MEANS OF WAVE SPECTRA AND STATISTICS, by W. J. Pierson, Jr., G. Neumann, and R. W. James, 1955, 284 pp., \$3.80 - This publication describes the basic concept and techniques of the first major attempt to apply recent research in wave spectra and statistics to wave forecasting.

TIDES, WAVES, AND SURFACE CURRENTS

PUB NO	TITLE/NOMENCLATURE
HOP 605	GRAPHICAL CONSTRUCTION OF WAVE REFRACTION DIAGRAMS, by J. W. Johnson, M. P. O'Brien, and J. D. Isaacs, 1948, 45 pp., \$.50 - This publication describes the wave front method and the direct orthogonals method for graphical construction of wave refraction diagrams.
HOP 700 SEC 1	OCEANOGRAPHIC ATLAS OF THE NORTH ATLANTIC OCEAN - TIDES AND CURRENTS, 1965, 93 pp., \$2.00 - This atlas is a compilation of data concerning the oceanography of the North Atlantic Ocean. This section contains data on tides and currents.
SP 44	VISUAL WAVE OBSERVATIONS, by W. J. Pierson, Jr., 1956, 50 pp., \$.35 - This publication describes techniques for the correct procedure to be followed in the visual observation of ocean waves. The theoretical basis for these techniques is given.
SP 92	OCEAN CURRENTS IN THE ARABIAN SEA AND NORTHWEST INDIAN OCEAN, by W. E. Boisvert, 1966, 29 pp., \$.80 - This publication presents surface currents and wind data from all available sources. Prevailing currents, probable currents, and mean current speed in knots are given.
SF 93	CIRCULATION PATTERNS - JOHNSTON ISLAND (WINTER-SUMMER 1965), by R. P. Kopenski and M. P. Wennekens, 1966, \$110.00 (with color photos), \$5.00 (less photos) - This publication presents an analysis of the circulation patterns around Johnston Island. Regional circulation is discussed from the standpoint of information gathered by making aerial observations, by tracking the drift of parachute drogue, and by measuring current direction and velocity with moored current meters.
TR 16	U. S. NAVY HYDROGRAPHIC OFFICE SYNOPSIS AND PROGNOSTIC WAVE CHARTS, by J. J. Schule, Jr. and J. F. Popak, 1955, 22 pp., \$.30 - This report describes a technique for preparing synoptic and prognostic wave charts.
TR 61	A REAPPRAISAL OF THE TIDES OF THE MEDITERRANEAN, by W. E. Maloney and R. E. Burns, 1958, 32 pp., \$.35 - This report proposes that the tides in the Mediterranean Sea are a direct response to the tide-producing forces and not a co-oscillation resulting from tidal progression from the Atlantic Ocean.

TIDES, WAVES, AND SURFACE CURRENTS

PUB NO	TITLE/NOMENCLATURE
TR 100	POWER SPECTRUM ANALYSIS OF WAVE MOTION, SUBMARINE ROLL ANGLE, AND RELATIVE CROSS-FLOW VELOCITIES - CRUISE II, USS REDFIN (SS-272), by P. S. DeLeonibus and M. J. Middleton, 1961, 61 pp., \$.65 - This publication presents a discussion of digital and analog recordings of surface wave motion and ship and fluid motions.
TR 148	WAVE CLIMATOLOGY AS AN AID TO SHIP ROUTING IN THE NORTH ATLANTIC OCEAN, by E. J. Joseph and J. M. Kipper, Jr., 1963, 28 pp., \$.35 - This publication presents climatological data for use by the mariner or forecaster in avoiding adverse seas during transits of the North Atlantic Ocean.
TR 149	A STUDY OF WAVE PERSISTENCE FOR SELECTED LOCATIONS IN THE NORTH ATLANTIC OCEAN, NORTH SEA, AND BALTIC SEA, by J. M. Kipper and E. Joseph, 1963, 69 pp., \$.65 - This report presents wave persistence graphs which were constructed from wave data obtained from lightships and ocean station vessels. An explanation and examples of how to interpret the graphics are given.
TR 179	ON THE GENERATION AND DIRECTIONAL RECORDING OF WAVES IN THE ARCTIC OCEAN, by L. A. LeSchack, 1965, 44 pp., \$.90 - This report describes experimental design and results in determining direction and generating mechanisms of surface wave action occurring in Arctic Ocean ice.
TR 183	WAVE HINDCAST PROJECT - NORTH ATLANTIC OCEAN, by D. C. Bunting, 1966, 42 pp., \$.75 - This final report gives a resume of the various phases of the task, the problems encountered with their solutions, and a summary of the final results.
TR 191	ON THE INTERPRETATION OF FETCH LIMITED WAVE SPECTRA AS MEASURED BY AN AIRBORNE SEA-SWELL RECORDER, by T. P. Barnett and J. C. Wilkerson, 1967, 62 pp., \$1.10 - This publication discusses fetch limited wave spectra that have been generated by a steady wind were sequentially measured using an airborne sea-swell recorder.
TR 192	WAVE CLIMATOLOGY AS AN AID TO SHIP ROUTING - PART II. INDIAN OCEAN AND INDONESIAN WATERS, by P. B. Land and R. Valitski, 1967, 40 pp., \$.75 - This report presents the geographic and temporal occurrence of head, beam, and following seas of specified heights in isoline analyses for four seasonal months.

TIDES, WAVES, AND SURFACE CURRENTS

- | PUB NO | TITLE/NOMENCLATURE |
|--------|--|
| TR 193 | MAJOR CURRENTS IN THE NORTH AND SOUTH ATLANTIC OCEANS BETWEEN 64°N and 60°S, by W. E. Boisvert, 1967, 104 pp., \$1.35 - This publication depicts the locations, direction of flow, speed, and other characteristics of the major currents of the North and South Atlantic Oceans. |
| TR 199 | A STUDY OF THE ANTILLES CURRENT USING MOORED CURRENT METER ARRAYS, by W. E. Maloney, 1967, 142 pp., \$1.35 This publication presents ocean current measurements of the upper and lower layers using the RICHARDSON-TYPE current meters near the Bahamas. The mean current structure for summer and winter periods are deduced from the observations. Current directions below 3,500 meters are consistent with classical concepts, but speeds are higher than classical estimates. |
| TR 200 | SOME SUMMER OCEANOGRAPHIC FEATURES OF THE LAPTEV AND EAST SIBERIAN SEAS, by R. C. Lockerman, 1968, 52 pp., \$1.20 - This report deals with the effects of water characteristics by the effluent of the rivers emptying into those seas. Analyses of data obtained from two NAVOCEANO surveys performed in 1963 and 1964 are presented. |
| TR 201 | OCEANOGRAPHIC SURVEY RESULTS OFF POINT ARGUELLO, CALIFORNIA - JANUARY AND NOVEMBER-DECEMBER 1964, by R. W. Thomas, 1968, 53 pp., \$.90 - This report summarizes the survey results of two cruises off Point Arguello, California and presents some analysis of the oceanographic conditions observed. The main emphasis is on the currents. |
| TR 202 | SOME RESULTS OF AN OCEANOGRAPHIC SURVEY IN THE NORTHERN GREENLAND SEA - SUMMER 1964, by L. A. Codispoti, 1968, 49 pp., \$.90 - This report deals with the distributions of temperature, salinity, dissolved oxygen saturation, and micronutrients. A brief discussion of the current schemes of the area using dynamic calculations is presented. |

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WORLD PORTS

- | PUB NO | TITLE/NOMENCLATURE |
|---------|---|
| HOP 150 | * WORLD PORT INDEX, 1963, 200 pp., \$1.50 - This publication contains locations and general descriptions of maritime ports and shipping places, with references to appropriate sailing directions and charts. |

WORLD PORTS

PUB NO	TITLE/NOMENCLATURE
HOP 151	* DISTANCES BETWEEN PORTS, 1965, 220 pp., \$3.00 - This publication contains a list of world ports and distances between ports.

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Ketchikan..... Service Electric Co., Inc., 744 Water St.,
99901

CALIFORNIA

Long Beach..... Captain's Locker, 251 Marina Dr., 90803
Captain's Locker, 6265 East Pacific Coast
Hwy., 90806

Marina Del Rey..... California Marine Supply Co., 4189 Admiralty
Way, 90291
Captain's Locker, 4766 Admiralty Way, 90291

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Coast Hwy., 92660
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92660

North Hollywood..... Pan American Navigation Service, 12021 Ven-
tura Blvd., 91604

Oakland..... Johnson & Joseph Co., 76 Jack London Sq.,
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Redondo Beach..... Captain's Corner, 344 North Harbor Dr.,
90803
Redondo Trading Post Co., 110 Diamond St.,
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Dr., 92106
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St., 94111

San Pedro..... Marine Hardware Co., 304 South Beacon St.,
90731
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St., 90731

Santa Barbara..... Coast Navigation School, 418 East Canon
Perdido, 93101
Seacoast Marine Corp., On the Breakwater,
P. O. Box 4284, 93103

CONNECTICUT

Essex..... Essex Paint & Marine Co., 06426

DISTRICT OF COLUMBIA

Washington..... Rand McNally Map Store, 1636 Eye St.,
Northwest, 20006

FLORIDA

Coconut Grove..... Crook & Crook, 2801 Bird Ave., 33133

Delray Beach..... Marineway Corp., 777 Palm Trail, 33444

Fort Lauderdale..... Bahia Mar Marine Inc., Bahia Mar Yachting
Center, 33304
Herold Boat Co., 1112 East Las Olas Blvd.,
33101
The Lauderdale Marine Inc., 1900 Southeast
15th St., 33316
Phillips Petroleum Co., Pier 66, P. O. Box
6628, Station 9, 33316
Sportsman's Paradise Inc., 5730 North
Federal Hwy., 33308

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32202
Navigation Services, 1948 Gulf Life Tower,
32207

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The Hopkins-Carter Hardware Co., 3701 Northwest 21st St., 33142
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Pompano Beach..... Lighthouse Marine Center, 2507 North Ocean Blvd., 33062

Tampa..... Poston Marine Hardware & Supply Co., Inc., 1012 East Cass St., P. O. Box 425, 33606

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LOUISIANA

New Orleans..... Baker, Lyman & Co., Inc., 308 Magazine St., 70130

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04112

MARYLAND

Annapolis..... Weems & Plath, Inc., 48 Maryland Ave.,
21401
Baltimore..... Maryland Nautical Sales, Inc., 406 Water
St., 21202
R. J. Taylor Co., 39 South Gay St., 21202

MASSACHUSETTS

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St., 02210
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02532
Dedham..... James Bliss, 100 Route 128 (At Exit 61),
02026
Marblehead..... Fred L. Woods, Jr., 76 Washington St.,
01945

MISSISSIPPI

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St., 39567

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Corp., 3 State St., 10004
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PENNSYLVANIA

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Heyward Supply Co., 212-216 Huger St., 29403

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Captain's, Salmon Bay Fishing Terminal,
98119
Metsker Maps, 1222 3rd Ave., 98104
Northwest Instrument Co., 5245 Shilhole
Ave., Northwest, 98107

Tacoma..... Metsker Maps, 111 South 10th St., 98104

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San Juan..... Puerto Rico Drydock & Marine Terminals,
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VIRGIN ISLANDS

Saint Thomas..... Paperbook Gallery, Palm Passage, 00801

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Kurt Sandmann, Bartolome Mitre, 1545

AUSTRALIA

Melbourne..... John Donne & Son, 372 Post Office Place,
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AUSTRALIA

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Pty., Ltd., 478 Collins St.
Robert & Mullins Pty., Ltd., 107 Elizabeth
St.

Queensland..... Watson Ferguson & Co., 221-243 Stanley St.,
South Brisbane

BAHAMAS

Nassau..... Island Tackle & Sports Shop, Out Island
Traders Bldg., P. O. Box 5693
John S. George & Co., Ltd, P. O. Box 287

BELGIUM

Antwerp..... E. Bogerd & Co., Ltd., 38 Brouwersvliet
Martin & Co., 28 Canal Des Brasseurs

BRAZIL

Rio De Janeiro..... South Atlantic Tankers S. A., Av Franklin
Roosevelt 23, Sala 1005

Santos..... Dick W. Dyb, Ltd., Travessa Dona Adelina,
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CANADA

British Columbia

Prince Rupert..... Edward Lipsett, Ltd.

Vancouver..... Bovey Marine (1952), 1117 W. Pender St.
(Zone 1)
Edward Lipsett, Ltd., 68 Water St.
Frederick Goertz, Ltd., 1328 W. Pender
St.
Kelvin Hughes Div., S. Smith & Sons
(Canada) Ltd., 1790 W. Georgia St.
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Kelvin Hughes Div., 72 Germain St.

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S. G. Brown (Canada) Ltd., 417 St. Peter
St.
Smiths Industries North America, Ltd.,
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Taiwan, Keelung..... China Marine Institute, Room 208, 6 Kang
Si St.

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Copenhagen..... Iver C. Weibach & Co. A/S, Ameliegade 30

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London..... Captain O. M. Watts (Exports) Ltd., 49
Albemarle St., Piccadilly (W-1)
H. Browne (Depot) Ltd., P. & O. Deck,
P. & O. Bldg., Leadenhall St. (EC 3)

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Marseille..... Etablissements Viallet, 8, Rue Beauvau

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Jacob (VI^e)
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Avenue de la Grande-Armee (16)

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Bremen..... "Seekarte" Korffsdeich NR 3

Bremerhaven..... "Seekarte" 22 Hoebelstrasse Fischereihafen

Hamburg..... Eckardt & Messtorff, Katherinefleet 5
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Akti Miaouli

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Haifa..... Yeda Yami, Ltd., 15 Zion St., Neve Shaanan

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Piazza S. Sabina 2
Societa Italiana Radio Marittima, Via Don
Vincenzo Minetti, 10

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Calata San Marco 13

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Giulio Douhet, 25

Trieste..... Societa Italiana Radio Marittima, Piazza
deli'Unita d'Italia, 1

Venezia..... Societa Italiana Radio Marittima, S. Croce,
No. 594

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Kobe..... Japan Hydrographic Charts and Publications
Co., Kobe Branch, Osaka Shosen Bldg, No.
5, Kaigan-Dori, Ikuta-Ku

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Sales Office, 1-10, Kaigan-Dori, Ikuta-
Ku

Tokyo..... Japan Hydrographic Charts and Publications
Co., Ltd., Nishiyama Bldg., No. 7-10, 1
Chome, Tsukiji, Chuo-Ku
Nippon Yusen Kaisha, 20-1, 2 Chome
Marunouchi, Chiyoda-Ku

Yokohama..... Nippon Yusen Kaisha, Yokohama Branch 9, 3
Chome Kaigan-Dori, Naka-Ku

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Acapulco, Gro..... Casa Hudson, S. A., I. De La Llave No. 5

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NORWAY

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Haugesund..... Nils Sund, Postgiro Konto 67016

Oslo..... J. W. Cappelen, Kirkegaten 15

PANAMA

Colon..... J. Cain & Co., Inc., Nautical Charts and
Publications Agents, P. O. Box 5005,
Cristobal, Canal Zone

PERU

Callao..... Servicio Hydrographico Y Faros, Arsenal
Naval, La Punta

PHILIPPINE ISLANDS

Manila..... Luzon Stevedoring Co., Inc., P. O. Box
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Wilson Bldg., 231 Juan Luna St.,
Binondo, P. O. Box 3600

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Goteborg (C)..... Aktiebolaget Nautic, Skeppsbron 2

Stockholm..... Nautiska Forlaget AB, Roslagsgatan 7

TRINIDAD

Port of Spain..... R. Landry & Co., Ltd., 12-14 London St.

URUGUAY

Montevideo..... Garblanco, S. A., Colon 1486, 2nd Floor

VENEZUELA

Caracas..... Alfa-Omega, S. A., Apartado del Esta 4824

La Guaira..... Alfa-Omega, S. A., Avenida Sowblette No. 12

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